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Title: MARSAME Radiological Release Report for Metal Items from TA 53- Set 16

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MARSAME Radiological Release Report for Metal Items from TA 53- Set 16

October 16, 2019

Summary

EPC-ES has evaluated the survey results for metal items from the Los Alamos Neutron Science Center (LANSCE) and found that the metal items described in Table 1 of this report (identified by RP Tracking Numbers) meet the criteria for unrestricted release under DOE Order 458.1 *Radiation Protection of the Public and the Environment* and can be recycled. This conclusion is based on the known history of the metal items and on radiation survey data (see the completed RP-Form-036 LANSCE Metals Clearance Log for each item). None of the items in this report are located within radiological areas. Therefore, the items are considered unencumbered and are not subject to the moratorium suspension on metal recycling from Department of Energy facilities. Additionally, LANL has determined that there is no practical opportunity for internal DOE reuse or recycling of this metal.

Process knowledge indicates that these metal items were unlikely to ever be in direct contact with the beam and thus are unlikely to have become activated. Surface contamination measurements (both total and removable) showed either no detectable radioactivity or activity levels within the range of background. All measurements for volumetric contamination were indistinguishable from background based on calculated decision limits. Additionally, all gamma isotopic surveys conducted for defense in depth showed no identifiable gamma radiation from beam activation.

Assessment of Sampling and Measurement Quality

The items included in this report have been classified as Class 3 (minimal potential for contamination) consistent with the Multi-Agency Radiation Survey and Assessment of Materials and Equipment (MARSAME) methodology (LANL TPP). Sampling and analysis protocol for these items was consistent with LANL policy and procedures (LANL FSD-004). Decision thresholds for scans of volumetric contamination were based on a false alarm probability (Type 1 error) of 1% (LANL TBD). The objectives of the measurements were to confirm, within the stated statistical confidence limits, that:

- 1) Measurements of total and removable surface radioactivity are below Table 10.2 values in EPC-ES-FSD-004 (LANL FSD-004), which are preapproved authorized limits for release for recycle, and
- 2) Potential residual volumetric radioactivity is below background levels (i.e. indistinguishable from background).

All data met the Measurement Quality Objectives (MQO). Specifically:

- 1) Appropriate instrumentation and techniques were used for the measurements and the expected radionuclides (LANL TPP, TBD, SOP)
- 2) Instruments were calibrated, response checked and background measurements were within expected ranges, and
- 3) The minimum detectable concentrations of the indistinguishable from background measurements were calculated to be below the ANSI 13.12 (2013) 1 mrem/yr (10 μ Sv/y) values (LANL TBD).

Results and Analyses of Measurements

The following table lists the items included in this MARSAME Metal Release Report. Each of the items was found to be acceptable for recycle based on surface and volumetric surveys (Attachment 1). Items in this table were of unknown origin but were known to be separated by both space and time from the active accelerator beam. We conclude, based on process knowledge and measurement results, that the items in this report are candidates for release and recycle.

Table 1. Summary table for metal items from LANSCE

	RP Tracking Number	Notes / Description	Complete RP-Form-036	Image	Releasable based on:		
					Direct Beta	Smear	Direct Gamma
1	29219321	Item not directly in beam	x	x	x	x	x
2	29229453	Item not directly in beam	x	x	x	x	x
3	29229490	Item not directly in beam	x	x	x	x	x
4	29229521	Item not directly in beam	x	x	x	x	x
5	29229538	Item not directly in beam	x	x	x	x	x
6	29229539	Item not directly in beam	x	x	x	x	x
7	29229540	Item not directly in beam	x	x	x	x	x
8	29229541	Item not directly in beam	x	x	x	x	x
9	29229542	Shield Blocks not directly in beam	x	x	x	x	x
10	29229543	Shield blocks not directly in beam	x	x	x	x	x
11	29229544	Item not directly in beam	x	x	x	x	x
12	29219680	Item not directly in beam	x	x	x	x	x
13	29229856	Item not directly in beam	x	x	x	x	x
14	29229857	Item not directly in beam	x	x	x	x	x

RP Tracking Number	Notes / Description	Complete RP-Form-036	Image	Releasable based on:		
				Direct Beta	Smear	Direct Gamma
15	29229862 Item not directly in beam	X	X	X	X	X
16	29229858 Item not directly in beam	X	X	X	X	X
17	29229860 Item not directly in beam	X	X	X	X	X
18	29229861 Item not directly in beam	X	X	X	X	X

References

ANSI (2013). *Surface and Volume Radioactivity Standards for Clearance*. ANSI 13.12.

(LANL Log) Los Alamos National Laboratory (2015) *LANSCE Metals Clearance Log*. LANL Radiation Protection Form RP-Form-031.006

(LANL FSD-004) Los Alamos National Laboratory (2017). *Environmental Radiation Protection*. LANL Functional Series Document EPC-ES-FSD-004.

(LANL SOP) Los Alamos National Laboratory (2017). *LANSCE Metals Clearance Process*. LANL procedure RP-SOP-077.005

(LANL TBD) Los Alamos National Laboratory (2015). *Technical Basis Documentation Regarding Health Physics Measurements for the Unrestricted Release of Metals from LANSCE*. RPSVS-RIC-TBD-03, R1.

(LANL TPP) Los Alamos National Laboratory (2015). *Data Quality Objectives for Measurement of Radioactivity in or on Items for Transfer into the Public Domain*. LANL Technical Project Plan ENV-ES-TPP-001, R1.

(MARSAME) Multi-Agency Radiation Survey and Assessment of Materials and Equipment Manual (2009). NUREG-1575 (Supp. 1), EPA 402-R-09-001, DOE/HS-004.

Attachment 1

LANSCCE Metals Clearance Log

Date/Time: 08.14.19 / 0830	Item Barcode Numbers 29219321
Photo File Name:	

Item Description, including any process and historical knowledge




Orange Metal Beam
Large Circular Magnet I
Large Circular Magnet II
Small Square Magnet
Metal Donut Component
Yellow Shield Block I
Yellow Shield Block II

Evaluation

Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y



Comments

Items surveyed were not directly in beam path

L. Sharisky RCT Name	 Signature	336582 Z-Number	09.11.19 Date
M. Duran RCT Name	 Signature	106440 Z-Number	9/11/19 Date
M. Duran HPFC Reviewer	 Signature	106440 Z-Number	9/11/19 Date

LANSCCE Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 08.14.19	Time: 0830	No. samples: 46
TA: 53	Building: 365	Room: Parking Lot
L. Sharisky RCT Name	 Signature	336582 Z Number
M. Duran RCT Name	 Signature	206440 Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7488	7488	01.20.20	165	30%	119.05

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15031	15031	02.06.20	78.4	120

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	87
2	74
3	88
4	70
5	73
Average	78.4

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
1	Orange Metal Beam: Top	205	Y [1-2]	50	Y
2	Orange Metal Beam: Bottom	178	Y [3-4]	71	Y
3	Large Circular Magnet I: Top	204	Y [5-10]	74	Y
4	Large Circular Magnet I: Bottom	198	Y [11-16]	75	Y
5	Large Circular Magnet II: Top	202	Y [17-22]	79	Y
6	Large Circular Magnet II: Bottom	189	Y [23-28]	98	Y
7	Small Square Magnet: Top	188	Y [29]	106	Y
8	Small Square Magnet: Bottom	164	Y [30]	108	Y
9	Metal Donut Component: Top	199	Y [31]	90	Y
10	Metal Donut Component: Bottom	224	Y [32]	108	Y
11	Metal Donut Component: Inside	208	Y [33]	47	Y

LANSCCE Metals Clearance Log

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
12	Metal Donut Component: Outside	213	Y [34]	71	Y
13	Yellow Shield Block I: Top	212	Y [35-36]	68	Y
14	Yellow Shield Block I: Bottom	188	Y [37-38]	77	Y
15	Yellow Shield Block I: Sides	189	Y [39-40]	82	Y
16	Yellow Shield Block II: Top	178	Y [41-42]	65	Y
17	Yellow Shield Block II: Bottom	197	Y [43-44]	107	Y
18	Yellow Shield Block II: Sides	212	Y [45-46]	87	Y
N/A	END OF SURVEY	N/A	N/A	N/A	N/A
N/A	N /A	N/A	N/A	N/A	N/A

Sample Report

Batch ID:	TA-53 Samples - 201908141524	Count Date:	8/14/2019 3:24:06PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	8140	Operating Volts:	1335
BC#:	29219321	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 240.71 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190814152406-E1	0.00	0.00	8.70	4.95	4.70	16.97	-150.00
20190814152707-E2	0.00	0.00	8.70	2.70	4.12	16.97	-70.45
20190814152817-E3	0.00	0.00	8.70	0.45	3.46	16.97	293.18
20190814152927-E4	0.00	0.00	8.70	7.20	5.21	16.97	-36.36
20190814153047-E5	0.00	0.00	8.70	4.95	4.70	16.97	-59.09
20190814153157-E6	0.00	0.00	8.70	0.45	3.46	16.97	-2.27
20190814153308-E7	0.00	0.00	8.70	7.20	5.21	16.97	88.64
20190814153417-E8	0.00	0.00	8.70	-4.05	1.35	16.97	-13.64
20190814153537-E9	3.21	3.21	8.70	7.20	5.21	16.97	-2.27
20190814153647-E10	0.00	0.00	8.70	0.45	3.46	16.97	88.64
20190814153758-E11	0.00	0.00	8.70	2.70	4.12	16.97	429.55
20190814153908-E12	0.00	0.00	8.70	0.45	3.46	16.97	145.45
20190814154018-E13	0.00	0.00	8.70	2.70	4.12	16.97	-47.73
20190814154138-E14	0.00	0.00	8.70	-1.80	2.62	16.97	168.18
20190814154248-E15	0.00	0.00	8.70	4.95	4.70	16.97	100.00
20190814154358-E16	0.00	0.00	8.70	-1.80	2.62	16.97	156.82
20190814154508-E17	0.00	0.00	8.70	-1.80	2.62	16.97	-195.45
20190814154628-E18	3.21	3.21	8.70	4.95	4.70	16.97	-229.55

Batch ID:	TA-53 Samples - 201908141524	Count Date:	8/14/2019 3:24:06PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	8140	Operating Volts:	1335
BC#:	29219321	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
 Beta Rate: 1.80 ± 0.60
 Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
 Beta: 44.44 ± 0.11
 Gamma: 8.80

$\gamma = 240.71 \text{ dpm}$

<u>Sample ID</u>	<u>Alpha (dpm)</u>	<u>Unc</u>	<u>Alpha MDA (dpm)</u>	<u>Beta (dpm)</u>	<u>Unc</u>	<u>Beta MDA (dpm)</u>	<u>Gamma (dpm)</u>
20190814154738-E19	0.00	0.00	8.70	0.45	3.46	16.97	213.64
20190814154848-E20	0.00	0.00	8.70	7.20	5.21	16.97	-172.73
20190814154958-E21	0.00	0.00	8.70	2.70	4.12	16.97	77.27
20190814155118-E22	0.00	0.00	8.70	2.70	4.12	16.97	-25.00
20190814155228-E23	0.00	0.00	8.70	4.95	4.70	16.97	-297.73
20190814155338-E24	6.43	4.55	8.70	-1.80	2.62	16.97	-47.73
20190814155448-E25	0.00	0.00	8.70	2.70	4.12	16.97	43.18
20190814155558-E26	0.00	0.00	8.70	0.45	3.46	16.97	122.73
20190814155719-E27	0.00	0.00	8.70	-1.80	2.62	16.97	-229.55
20190814155829-E28	3.21	3.21	8.70	0.45	3.46	16.97	43.18
20190814155939-E29	0.00	0.00	8.70	-1.80	2.62	16.97	-115.91
20190814160049-E30	3.21	3.21	8.70	2.70	4.12	16.97	259.09
20190814160209-E31	0.00	0.00	8.70	2.70	4.12	16.97	-127.27
20190814160319-E32	0.00	0.00	8.70	2.70	4.12	16.97	134.09
20190814160429-E33	0.00	0.00	8.70	-1.80	2.62	16.97	31.82
20190814160539-E34	0.00	0.00	8.70	2.70	4.12	16.97	-195.45
20190814160649-E35 alpha exceeds mda	9.64	5.57	8.70	0.45	3.46	16.97	-13.64
20190814160809-E36	0.00	0.00	8.70	-4.05	1.35	16.97	-104.55
20190814160919-E37	0.00	0.00	8.70	0.45	3.46	16.97	77.27
20190814161030-E38	0.00	0.00	8.70	4.95	4.70	16.97	225.00

Batch ID: TA-53 Samples - 201908141524
Group: E
Device: S5XLBG Unit2
Batch Key: 8140
BC#: 29219321
Bldg:

Count Date: 8/14/2019 3:24:06PM
Count Minutes: 1.00
Count Mode: Simultaneous
Operating Volts: 1335
Gamma Volts: 828
Selected Geometry 5/16" Stainless Steel

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 \pm 0.00
Beta Rate: 1.80 \pm 0.60
Gamma Rate: 155.20 \pm 5.57

Alpha: 31.11 \pm 0.11
Beta: 44.44 \pm 0.11
Gamma: 8.80

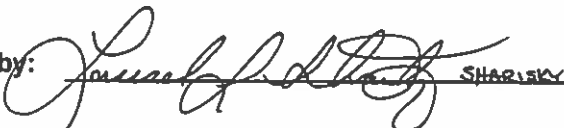
$\gamma = 240.71$ dpm

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190814161139-E39	0.00	0.00	8.70	-4.05	1.35	16.97	100.00
20190814161259-E40	0.00	0.00	8.70	2.70	4.12	16.97	-2.27
20190814161409-E41	0.00	0.00	8.70	-1.80	2.62	16.97	100.00
20190814161519-E42	0.00	0.00	8.70	-1.80	2.62	16.97	-343.18
20190814161630-E43	0.00	0.00	8.70	9.45	5.67	16.97	54.55
20190814161750-E44	0.00	0.00	8.70	-1.80	2.62	16.97	-47.73
20190814161900-E45	0.00	0.00	8.70	4.95	4.70	16.97	145.45
20190814162010-E46	0.00	0.00	8.70	-4.05	1.35	16.97	65.91

~~All Smears~~ < MDALimits

α EXCEPT SHEAR # 3, 11, 30, 35; RECOUNT DATA ON NEXT PAGE

Reviewed by:

 SHARISKY

Sample Report

Batch ID: TA-53 Samples - 201908141626
Group: E
Device: S5XLBG Unit2
Batch Key: 8141
BC#:
Bldg:

Count Date: 8/14/2019 4:26:51PM
Count Minutes: 1.00
Count Mode: Simultaneous
Operating Volts: 1335
Gamma Volts: 828
Selected Geometry 5/16" Stainless Steel

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)


Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\sigma = 240.81 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190814162651-E3	0.00	0.00	8.70	0.45	3.46	16.97	100.00
20190814162822-E11	0.00	0.00	8.70	2.70	4.12	16.97	-138.64
20190814162932-E30	3.21	3.21	8.70	-1.80	2.62	16.97	213.64
20190814163042-E35	0.00	0.00	8.70	4.95	4.70	16.97	281.82

~~All Smears < MDALimits~~
EXCEPT 35; RECOUNT DATA ON NEXT PAGE

Reviewed by:

 SHARISK

Sample Report

Batch ID:	TA-53 Samples - 201908141633	Count Date:	8/14/2019 4:33:16PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	8142	Operating Volts:	1335
BC#:		Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

Background (cpm)

Alpha Rate: 0.00 \pm 0.00
Beta Rate: 1.80 \pm 0.60
Gamma Rate: 155.20 \pm 5.57

Efficiency (%)

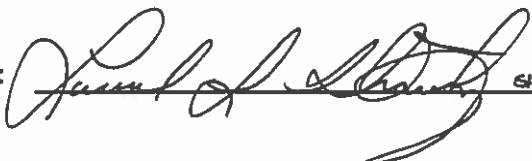
Alpha: 31.11 \pm 0.11
Beta: 44.44 \pm 0.11
Gamma: 8.80

$\gamma = 240.81 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190814163316-E35	0.00	0.00	8.70	0.45	3.46	16.97	134.09

All Smears < MDALimits

Reviewed by:

 SHARKEY

2019_09_09_11_57_290.epc
29219321

5-Sep-2019 1:00:30 PM

101

Calibration Check

Background

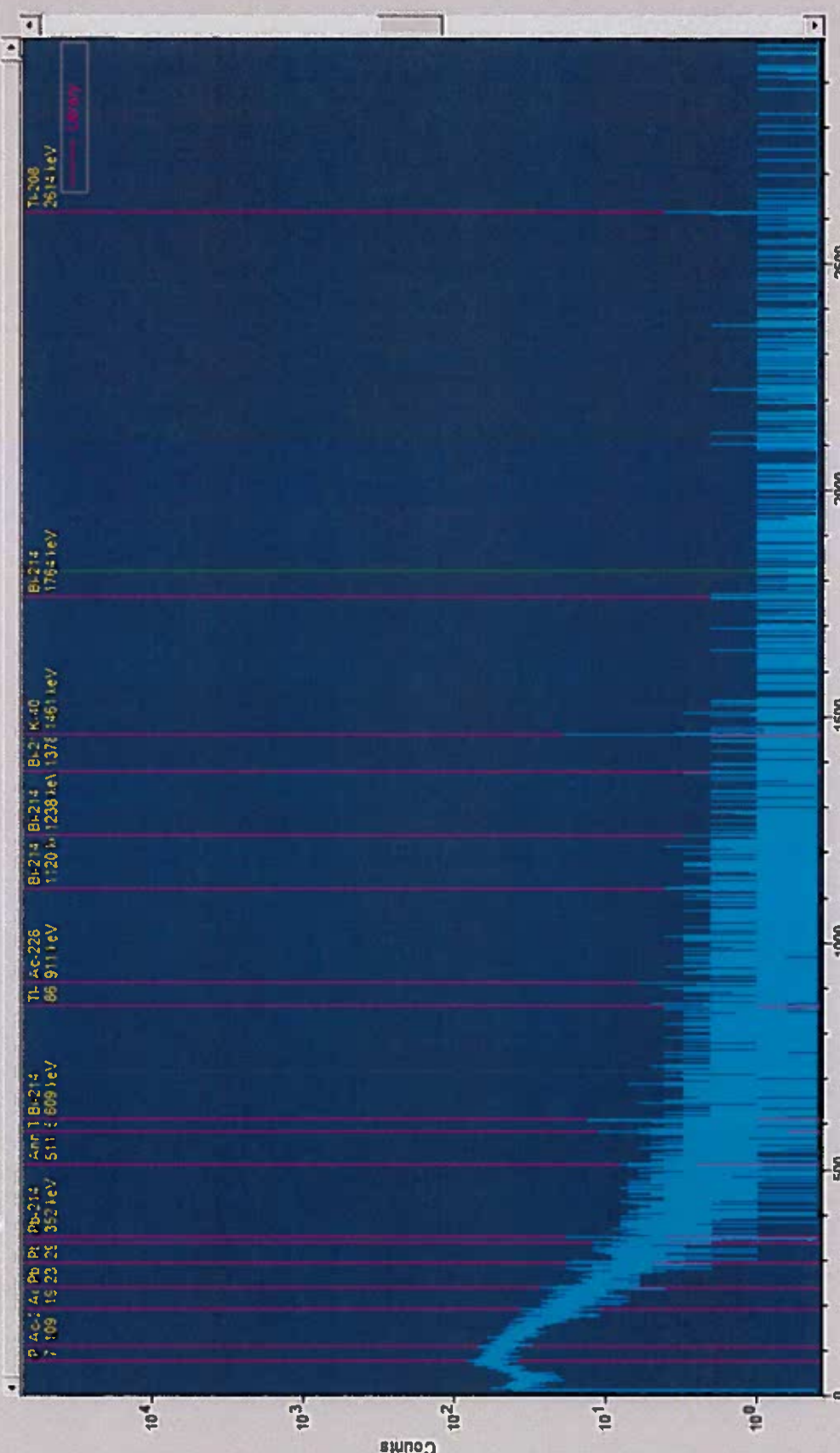
Using Previous Settings

0.225	0.3658
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PeakE and Lib

File Drag & Drop Permitted

File Drop & Drop Permitted



10

Energy (keV)	PhotoDecay	Isotope	Decay Mode
572.29	1 500e-003	Ac-228	Beta-
580.13	3 519e-003	Pb-214	Beta-
583.15	3 075e-001	Th-208	Beta-
583.41	1 110e-003	Ac-228	Beta-
592.31	4 510e-001	Bi-214	Beta-
665.45	1 460e-002	Bi-214	Beta-
674.16	1 090e-003	Ac-228	Beta-
701.75	1 730e-003	Ac-228	Beta-
703.11	4 720e-003	Bi-214	Beta-
707.41	1 550e-003	Ac-228	Beta-

TH-232, U-238, K-40

NA	NA
----	----

- ☒ Includes X-Ray
- ☒ Includes Full Blood Tests

100

Half-Life

Assumed Age NA

236 Rem/hr

100

BETA/GAMMA SURVEY INSTRUMENT PERFORMANCE TEST LOG

Instrument Manufacture: Eberline Model: ESP-1 HSE# (P/N): 7483 Cal. Due Date: 01-08-20 Location: TA-53, MPF-3R, Rm. 141

Reference Source

ID: K-323

Isotope: Sr⁹⁰

Activity: 40.83 µCi

Bkg: 195 dpm

Filter Position or Range: Open Scale

Reference Reading: 1310 dpm

Net Reading: 1115 dpm

Acceptance Range ($\pm 20\%$): 892 dpm / 1330 dpm

Check Source

ID #: D38-00 2536

Isotope: D-38

Activity: 2.6 µCi

Reference: 9020 dpm

$\pm 20\%$: 7216 to 10824 dpm

03 APR 19

Date Reference Readings Established

L. SHARISKY

RCT Name

[Signature]

Signature

334582

Z Number

Date/Time	Background	Net Reference Reading Scale 1	Net Reference Reading Scale 2	Net Reference Reading Scale 3	Net Reference Reading Scale 4	Check Source Reading	Pass/Fail	Printed Name/Signature	Comments
01 AUG 19 / 0750	160	1122	N/A	N/A	N/A	9202	PASS	L. SHARISKY / <i>[Signature]</i>	METAL CLEARANCE
08 AUG 19 / 0800	216	1174	N/A	N/A	N/A	9104	PASS	L. SHARISKY / <i>[Signature]</i>	METAL CLEARANCE
12 AUG 19 / 0830	205	1205	N/A	N/A	N/A	9185	PASS	L. SHARISKY / <i>[Signature]</i>	METAL CLEARANCE
13 AUG 19 / 0830	189	1291	N/A	N/A	N/A	9141	PASS	L. SHARISKY / <i>[Signature]</i>	METAL CLEARANCE
14 AUG 19 / 0800	227	1153	N/A	N/A	N/A	9273	PASS	L. SHARISKY / <i>[Signature]</i>	METAL CLEARANCE
								/	
								/	
								/	
								/	
								/	
								/	
								/	
								/	
								/	
								/	
								/	
								/	

COPY

RadEye SX / L44-3 Performance Test Log

TA: 53	Bldg: 38	Rm: 141	Instrument PN: 15031	Cal Due Date: 2-6-20
Model: RadEye SX / Ludlum 44-3				Count time: 60 seconds

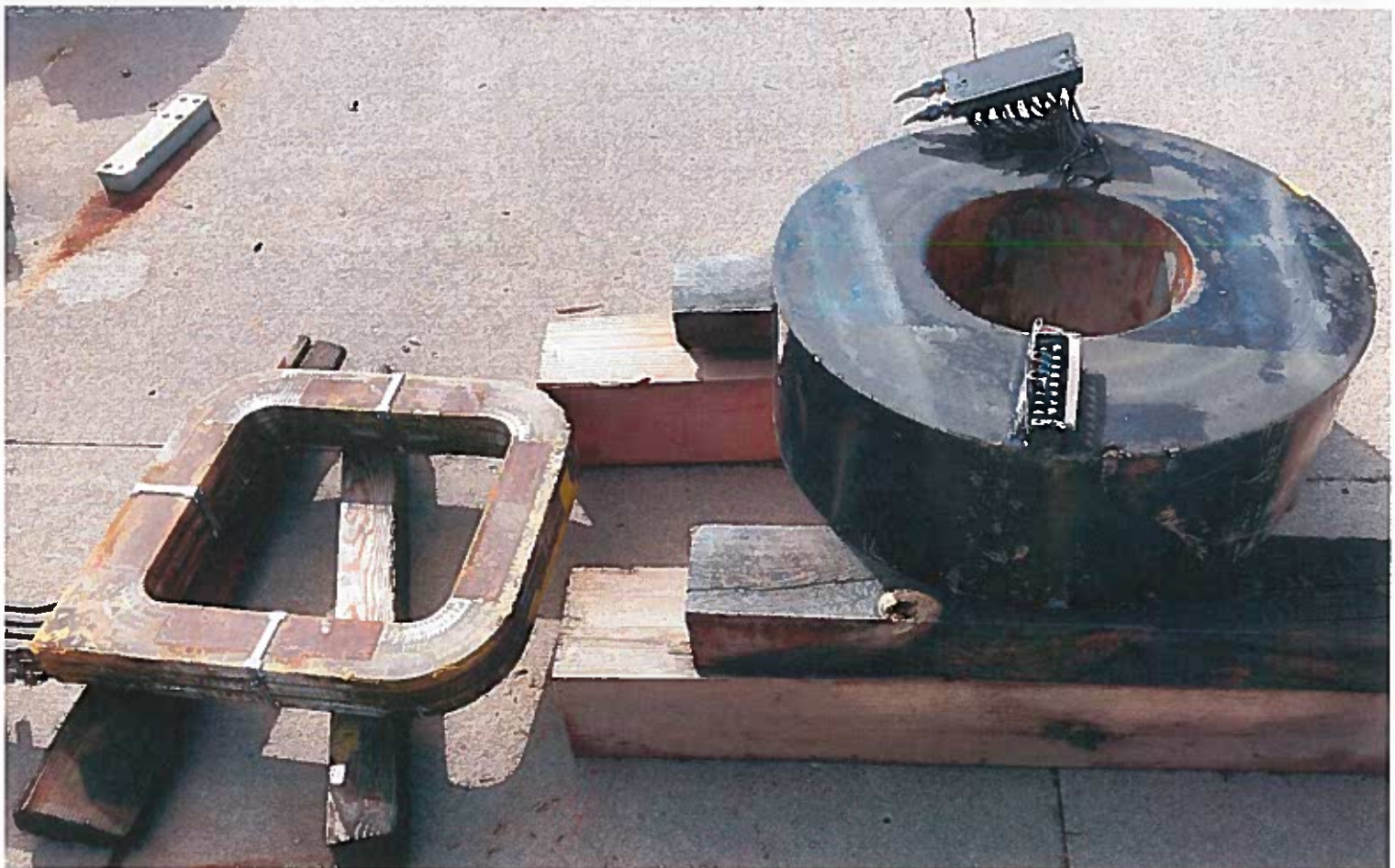
Reference Readings

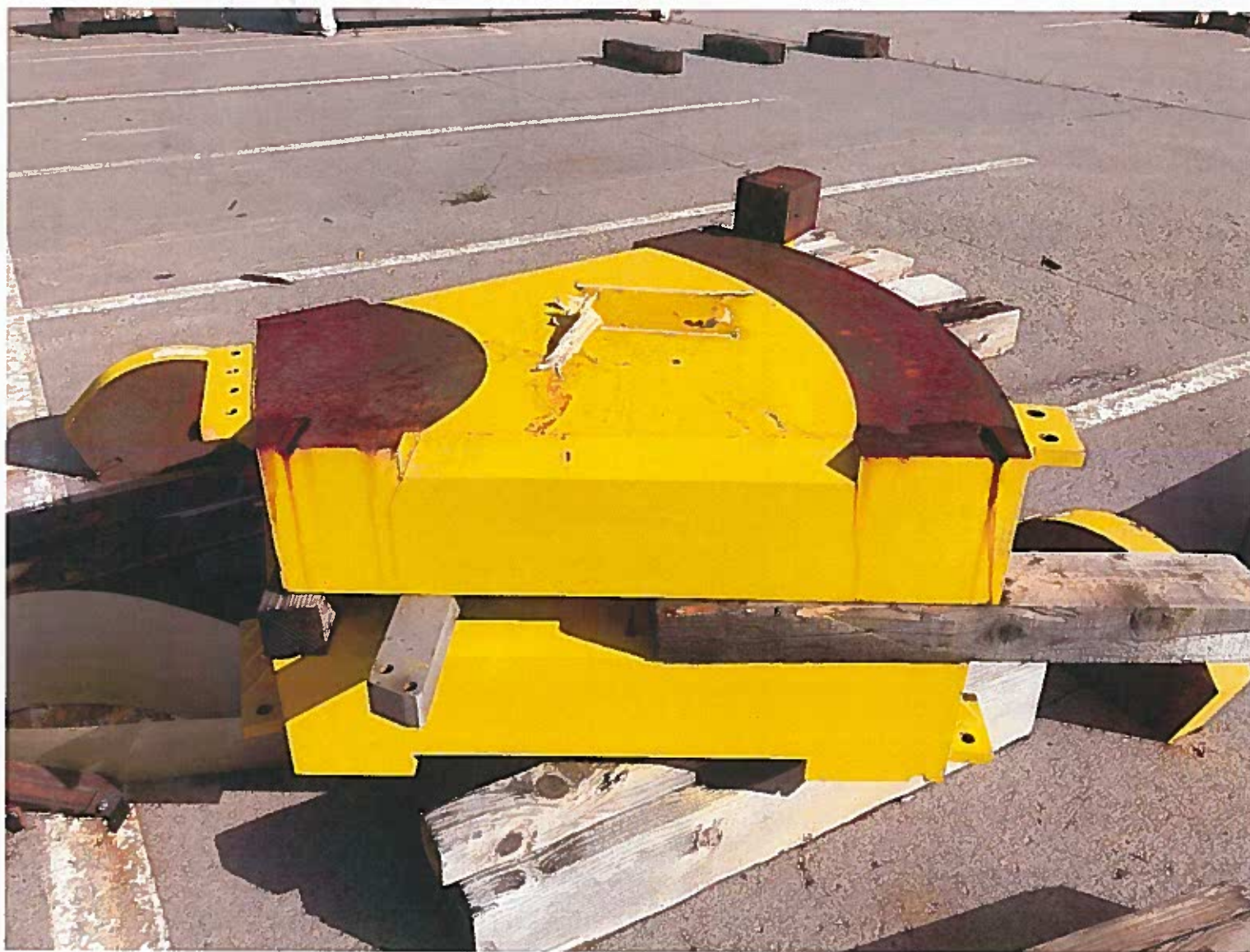
Check Sources	Isotope	ID#	Activity (dpm)	60 Second Bkg (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Expected -20% (cpm x 0.8)	Expected +20% (cpm x 1.2)
	SLY 90	K-323	40,834	279	10,000	9,721	7,777	11,665

Date Reference Readings Established: 6-27-19 RCT name: B. Moore Signature: *Brian Ayr* z-number: 322536

Performance Test Results

Background / Sample Count Time: 60 seconds									
Date/Time	Background (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Pass / Fail	RCTZ Number	RCT Name	RCT Signature	Comments	
6-27-19 0900	279	9891	9,615	Pass	322536	B. Moore	<i>Brian Ayr</i>	First test	
7-1-19 0900	211	9836	9,625	Pass	322536	B. Moore	<i>Brian Ayr</i>	Free release	
7-3-19 0715	250	10,000	9,750	Pass	322536	B. Moore	<i>Brian Ayr</i>	RWP sec A	
7-8-19 0850	210	10,500	10,290	Pass	322536	B. Moore	<i>Brian Ayr</i>	Free release	
7-10-19 0740	240	9,919	9,679	Pass	322536	B. Moore	<i>Brian Ayr</i>	RWP 535	
7-11-19 1000	258	11,000	10,742	Pass	322536	B. Moore	<i>Brian Ayr</i>	Concrete blocks	
5/1/19 0846	369	11,800	11,431	PASS	331239	ADKISAN	<i>Blank</i>		
08-08-19 0800	210	11,900	11,630	PASS	336582	L. SHARISKY	<i>David L. Sharisky</i>	METAL CLEARANCE	
08-12-19 0830	267	9,790	9,523	PASS	336582	L. SHARISKY	<i>David L. Sharisky</i>	METAL CLEARANCE	
08-13-19 0830	260	11,900	11,610	PASS	336582	L. SHARISKY	<i>David L. Sharisky</i>	METAL CLEARANCE	
08-14-19 0800	246	12,300	12,054	PASS	336582	L. SHARISKY	<i>David L. Sharisky</i>	METAL CLEARANCE	
								COPY	





29219321

LANSCCE Metals Clearance Log

Date/Time: 05.02.2019/1415	Item Barcode Numbers 29229453
Photo File Name:	

Item Description, including any process and historical knowledge


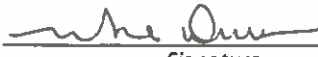
One Metal Block with four Eye-Bolts on top – Light blue in color

Evaluation

Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y

Comments

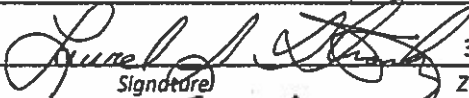

Does not appear to be a beam line component

Laurel J Sharisky RCT Name	 Signature	336582 Z-Number	05.08.2019 Date
Kelsey N Neal RCT Name	 Signature	331301 321301 Z-Number	5.8.19 05.08.2019 Date
M. Duran HPFC Reviewer	 Signature	106440 Z-Number	9/11/19 Date

LANSCCE Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 05.02.2019	Time: 1415	No. samples: 12
TA: 53	Building: 365	Room: Parking Lot

L. Sharisky		336582
RCT Name	Signature	Z Number
K. Neal		331301
RCT Name	Signature	Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7488	7488	01.08.2020	195	30%	128.55

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15065	15065	01.20.2020	78.4	120

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	82
2	89
3	79
4	69
5	73
Average	78.4

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 Inch (cpm)	Less than DL? (Y/N)
1	Top Surface	185	Y [1-2]	67	Y
2	Side (Ease Facing)	165	Y [3-4]	50	Y
3	Side (North Facing)	195	Y [5-6]	79	Y
4	Side (West Facing)	153	Y [7-8]	75	Y
5	Side (South Facing)	120	Y [9-10]	80	Y
6	Bottom Surface	120	Y [11-12]	68	Y
N/A	END OF SURVEY	N/A	N/A	N/A	N/A
I	I	I	I	I	I
I	I	I	I	I	I
N/A	N/A	N/A	N/A	N/A	N/A

LANSCCE Metals Clearance Log

[illegible]

Sample Report

Batch ID:	TA-53 Samples - 201905021512	Count Date:	5/2/2019 3:12:15PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7053	Operating Volts:	1335
BC#:	29229453	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229453

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\sigma = 248.76$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190502151215-E1	0.00	0.00	8.70	2.70	4.12	16.97	-13.64
20190502151516-E2	3.21	3.21	8.70	4.95	4.70	16.97	-252.27
20190502151626-E3	3.21	3.21	8.70	7.20	5.21	16.97	-36.36
20190502151736-E4	0.00	0.00	8.70	-4.05	1.35	16.97	281.82
20190502151856-E5	0.00	0.00	8.70	9.45	5.67	16.97	111.36
20190502152006-E6	0.00	0.00	8.70	0.45	3.46	16.97	202.27
20190502152116-E7	0.00	0.00	8.70	0.45	3.46	16.97	270.45
20190502152226-E8	3.21	3.21	8.70	0.45	3.46	16.97	-13.64
20190502152346-E9	0.00	0.00	8.70	0.45	3.46	16.97	-104.55
20190502152456-E10	0.00	0.00	8.70	-4.05	1.35	16.97	-25.00
20190502152606-E11	0.00	0.00	8.70	0.45	3.46	16.97	259.09
20190502152716-E12	0.00	0.00	8.70	-4.05	1.35	16.97	213.64

~~All~~ Smears < MDALimits

EXCEPT SMEAR # 4, # 7, # 11

Reviewed by:

SHARKEY

Sample Report

Batch ID:	TA-53 Samples - 201905021541	Count Date:	5/2/2019 3:41:01PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit	Count Mode:	Simultaneous
Batch Key:	7054	Operating Volts:	1335
BC#:		Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229453

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\sigma = 248.76$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190502154101-E1	0.00	0.00	8.70	0.45	3.46	16.97	9.09
20190502154232-E2	0.00	0.00	8.70	-4.05	1.35	16.97	-104.55
20190502154342-E3	0.00	0.00	8.70	2.70	4.12	16.97	88.64

#1 smear = #4 smear from first count
#2 smear = #7 smear from first count
#3 smear = #11 smear from first count

Handwritten signature

All Smears < MDALimits

Reviewed by:

Handwritten signature

CHARISKY

Load Second/Back Spectrum

Any File

PeakE asyLib

File Drag & Drop Permitted



PeakEasy

Nuclide Library

Nuclide Search

Advanced Calibration

Energy #1 (keV)

10956.44

< 3.0 >

Energy #2 (keV)

NA

< 3.0 >

☐ Always show matching energy line for the selected nuclide (even if very weak)

Search

Clear Lines

Clear Table

Results	Energy (keV)	Difference	PhotoDecay	Nuclide	Parent Half-life
Lu-172	10933.66	-2.78	6.250e-001	Lu-172	6.70 days
Fe-59	10939.25	+2.61	5.650e-001	Fe-59	45.10 days
As-71	10955.49	-0.95	4.084e-002	As-71	2.70 days
U-239	10966.99	+0.55	2.597e-005	U-239	1412.00 sec
In-116m	10973.33	+0.89	5.621e-001	In-116m	54.15 min
Bi-206	10982.26	+1.82	1.350e-001	Bi-206	6.24 days
In(n,g)	1097.00	+0.56	1.194e-001	In(n,g)	NA
Te-119m	10955.75	-0.69	2.238e-002	Te-119m	4.68 days
U-232	10933.90	-2.54	1.455e-003	U-232	720.0 yrs
Th-232	10933.90	-2.54	1.476e-003	Th-232	14.0 yrs

RP Tracking Number

292229453



TA: 53	Bldg: 3R	Rm: 141	Instrument PN: 5065	Cal Due Date: 1-17-20
Model: RadEye SX /Ludlum 44-3				Count time: 60 seconds

[illegible]

Performance Test Results

[illegible]



BETA/GAMMA SURVEY INSTRUMENT PERFORMANCE TEST LOG

Instrument Manufacture: Eberline Model: ESP-1 HSE# (P/N): 007488 Cal. Due Date: 01/08/20 Location: TA-53, MPF-3R, Rm. 141

Reference Source		Filter Position or Range:		Open Scale	Check Source	
ID:	Isotope:	Reference Reading:	Net Reading:	Acceptance Range ($\pm 20\%$)	ID #:	Isotope:
K-323	Sr ⁹⁰	1730 dpm	1115 dpm	892 dpm / 1338 dpm	D38-00	D-38
Activity: 40.83 μ ci					Activity: 2.6 μ ci	
Bkg: 115 dpm					Reference: 9020 dpm	
					$\pm 20\%$: 7216 to 10824 dpm	

03 APR 19
Date Reference Readings Established

LAUREL J SHARSKY
RCT Name

Laurel J Sharsky
Signature

3316597
Z Number

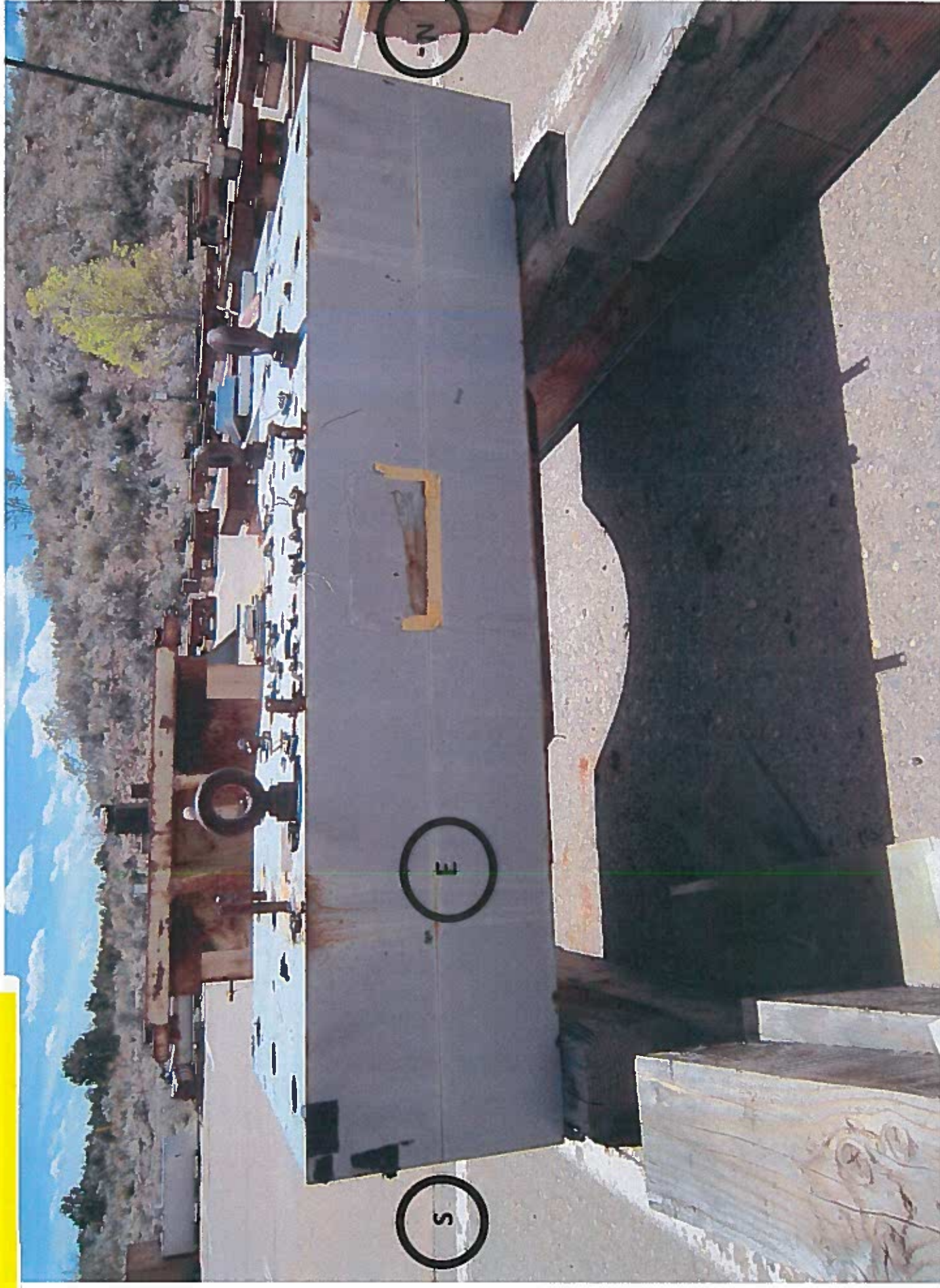
[illegible]

RP Tracking Number



29229453


29229453



LANSCCE Metals Clearance Log

Date/Time: 05.08.2019/1000	Item Barcode Numbers 29229490
Photo File Name:	

Item Description, including any process and historical knowledge

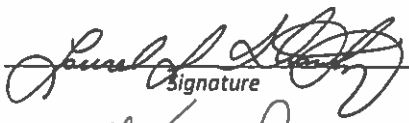

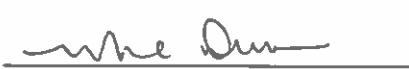
Two pastel green, crescent metal arches
<p>RP Tracking Number</p>  <p>29229490</p>

Evaluation

Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y

Comments

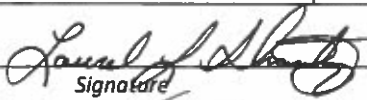

Two pastel green, crescent metal arches; Both components do not appear to have been directly exposed to the beam;

L. Sharisky RCT Name	 Signature	336582 Z-Number	05.14.19 Date
K. Neal RCT Name	 Signature	331301 Z-Number	5.14.19 Date
M. Duran HPFC Reviewer	 Signature	106440 Z-Number	5/11/19 Date

LANSCC Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 05.08.2019	Time: 0845	No. samples: 20
TA: 53	Building: 365	Room: Parking Lot

L. Sharisky		336582
RCT Name	Signature	Z Number
K. Neal		331301
RCT Name	Signature	Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7488	7488	01.08.20	227	30%	137.91

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15028	15028	08.09.2019	61	95

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	65
2	61
3	55
4	57
5	67
Average	61

RP Tracking Number



29229490

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
1	Top Side; Item A	290	Y [1-5]	65	Y
2	Bottom Side; Item A	175	Y [6-10]	83	Y
3	Top Side; Item B	217	Y [11-15]	70	Y
4	Bottom Side; Item B	209	Y [16-20]	87	Y
N/A	End of Survey	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A

LANSCCE Metals Clearance Log

[illegible]

Sample Report

Batch ID:	TA-53 Samples - 201905081405	Count Date:	5/8/2019 2:05:04PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Uni	Count Mode:	Simultaneous
Batch Key:	7107	Operating Volts:	1335
BC#:	29229490	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229490

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\sigma = 241.25$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190508140504-E1	3.21	3.21	8.70	0.45	3.46	16.97	-93.18
20190508140805-E2	0.00	0.00	8.70	0.45	3.46	16.97	168.18
20190508140915-E3	3.21	3.21	8.70	7.20	5.21	16.97	247.73
20190508141025-E4	0.00	0.00	8.70	7.20	5.21	16.97	236.36
20190508141145-E5	3.21	3.21	8.70	0.45	3.46	16.97	-195.45
20190508141255-E6	0.00	0.00	8.70	0.45	3.46	16.97	-172.73
20190508141405-E7	0.00	0.00	8.70	-4.05	1.35	16.97	304.55
20190508141515-E8	3.21	3.21	8.70	-1.80	2.62	16.97	338.64
20190508141635-E9	0.00	0.00	8.70	0.45	3.46	16.97	111.36
20190508141745-E10	0.00	0.00	8.70	-1.80	2.62	16.97	122.73
20190508141855-E11	0.00	0.00	8.70	2.70	4.12	16.97	20.45
20190508142005-E12	3.21	3.21	8.70	0.45	3.46	16.97	88.64
20190508142115-E13	3.21	3.21	8.70	4.95	4.70	16.97	-81.82
20190508142235-E14	3.21	3.21	8.70	4.95	4.70	16.97	-47.73
20190508142345-E15	0.00	0.00	8.70	0.45	3.46	16.97	122.73
20190508142455-E16	0.00	0.00	8.70	2.70	4.12	16.97	65.91
20190508142605-E17	0.00	0.00	8.70	-1.80	2.62	16.97	-252.27
20190508142726-E18	3.21	3.21	8.70	-4.05	1.35	16.97	31.82

Batch ID: TA-53 Samples - 201905081405
Group: E
Device: S5XLBG Unit2
Batch Key: 7107
BC#: 29229490
Bldg:

Count Date: 5/8/2019 2:05:04PM
Count Minutes: 1.00
Count Mode: Simultaneous
Operating Volts: 1335
Gamma Volts: 828
Selected Geometry 5/16" Stainless Steel

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 241.25$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190508142836-E19	3.21	3.21	8.70	-1.80	2.62	16.97	236.36
20190508142946-E20	0.00	0.00	8.70	-1.80	2.62	16.97	213.64

RP Tracking Number



29229490

All Smears < MDALimits

EXCEPT SMEAR# 3, #7, #8

Reviewed by:

Page 2 of 2

C:\Users\Canberra\AppData\Local\Temp\LANL sample report {0D78D318-85A}

Print Date 5/8/2019
Print Time 2:31:01PM

Sample Report

Batch ID:	TA-53 Samples - 201905081441	Count Date:	5/8/2019 2:41:54PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7109	Operating Volts:	1335
BC#:		Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 241.25$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190508144154-E1	3.21	3.21	8.70	2.70	4.12	16.97	31.82
20190508144325-E2	0.00	0.00	8.70	0.45	3.46	16.97	9.09
20190508144435-E3	3.21	3.21	8.70	4.95	4.70	16.97	-195.45

RP Tracking Number



29229490

All Smears < MDALimits

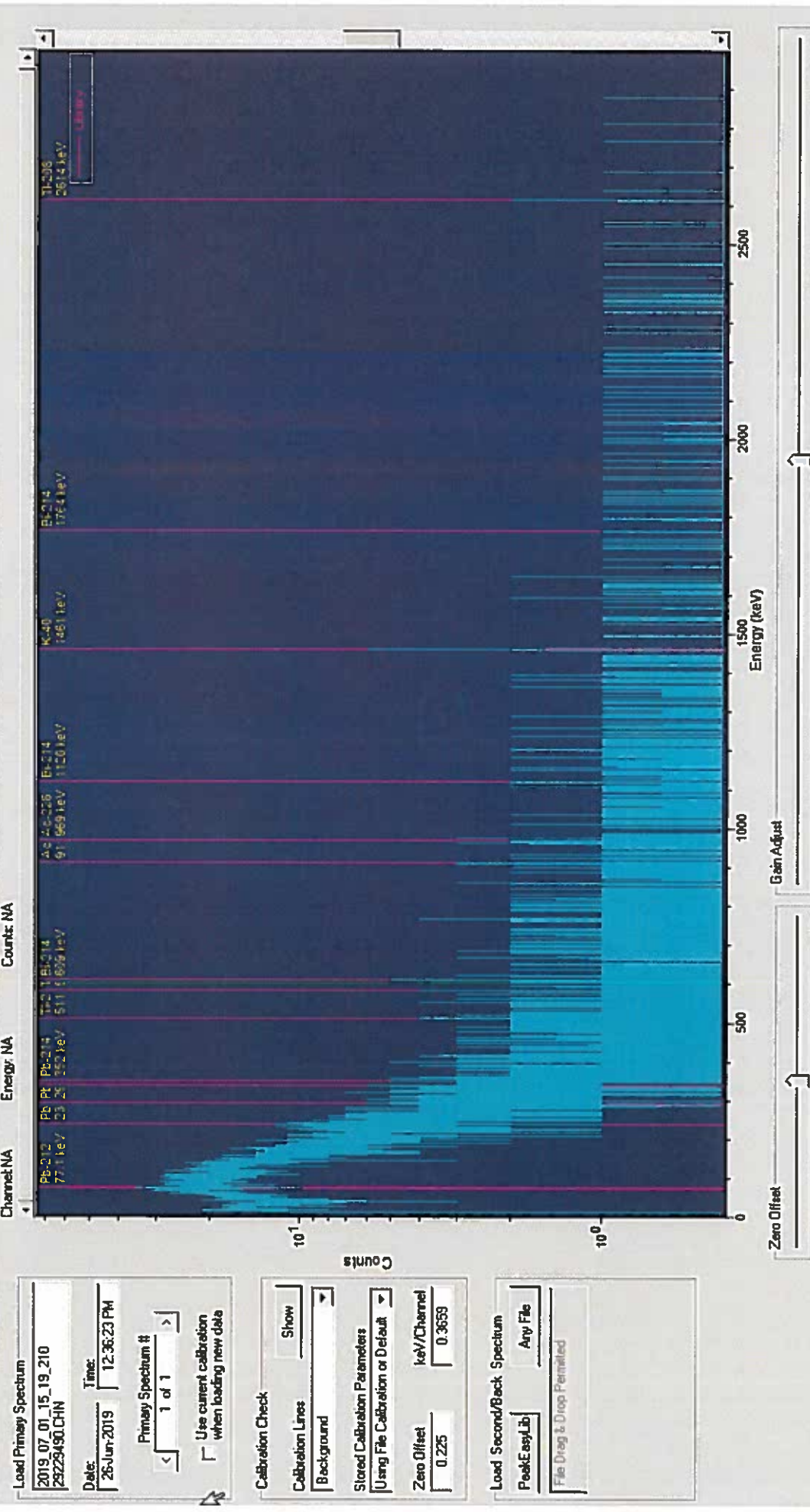
#1 smear = #3 smear from first count
#2 smear = #7 smear from first count
#3 smear = #8 smear from first count

Laurel L. Smith 5.8.19

Reviewed by:

Laurel L. Smith

SHARISEY



Calibration Check

Calibration Lines:

Stored Calibration Parameters

Using File Calibration or Default:

Zero Offset: keV/Channel

Load Second/Back Spectrum

PeakEasyLib:

File Drag & Drop Permitted

Radioactive Nuclide:

Half-Life:

Assumed Age:

G Dose Rate / Ci @ 1m:

Parents and Decay Chains:

Curies / Gram:

Density (g/cc):

☒ Include All Daughters

☒ Include X-Rays

Energy (keV) | PhotoDecay | Nuclide | Decay Mode

295.22	1.930e-001	Pb-214	Beta
77.11	1.750e-001	Pb-212	Beta
968.97	1.580e-001	Ac-228	Beta
1764.49	1.540e-001	Bi-214	Beta
1120.29	1.510e-001	Bi-214	Beta
338.32	1.127e-001	Ac-228	Beta
1460.83	1.067e-001	K-40	Beta
74.81	1.040e-001	Pb-212	Beta
510.77	8.12e-002	Tl-208	Beta
77.11	7.999e-002	Pb-214	Beta



Los Alamos
NATIONAL LABORATORY
— EST. 1943 —

RadEye SX / L44-3 Performance Test Log

T/A: <u>S3</u>	Bldg: <u>3R</u>	Rm: <u>2141</u>	Instrument PN: <u>15023</u>	Cal Due Date: <u>8/9/19</u>	Count time: 60 seconds
Model: RadEye SX / Ludlum 44-3					

COPY

Reference Readings

Check Sources	Isotope	117II	Activity (dpm)	60 Second Bkg (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Expected -20% (cpm x 0.8)	Expected +20% (cpm x 1.2)
	<u>Sr90</u>	<u>K323</u>	<u>40.3 uCi</u>	<u>256</u>	<u>12,100</u>	<u>11844</u>	<u>9,475</u>	<u>14713</u>

Date Reference Readings Established: 11/14/18 RCT name: D. Garin Signature: [Signature] Z-number: 324206

Performance Test Results

Date/Time	Background (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Pass/Fail	RCTZ Number	RCT Name	RCT Signature	Comments
1-16-19 @ 0800	260	11,800	11,540	PASS	324206	D. Garin	[Signature]	
2-12-19 @ 1030	318	11,912	11,592	PASS	331239	B. Adams	[Signature]	
4-11-19 @ 1300	310	11,900	11,590	PASS	324206	D. Garin	[Signature]	
4-2-19 @ 0720	314	11,800	11,486	PASS	315139	M. Muscarella	[Signature]	
4-3-19 @ 0805	291	11,700	11,409	PASS	315139	M. Muscarella	[Signature]	
4-4-19 @ 0735	312	11,700	11,388	PASS	315139	M. Muscarella	[Signature]	
4-16-19 @ 0755	308	11,600	11,292	PASS	315139	M. Muscarella	[Signature]	
4-24-19 @ 0800	271	11,800	11,529	PASS	324206	J. V. [Signature]	[Signature]	See 1
5-13-19 @ 1230	288	11,900	11,642	PASS	331239	L. SHARISKY	[Signature]	
5-14-19 @ 0800	277	11,900	11,623	PASS	331239	L. SHARISKY	[Signature]	METAL CLEARANCE



NATIONAL LABORATORY
EST. 1943

Instrument Manufacture: Eberline Model: ESP-1 HSE# (P/N): 5067485 Cal. Due Date: 01/08/20 Location: TA-53, MPF-3R, Rm. 141

Reference Source	Check Source
ID: K-323	ID #: D38-00 WZL 2536
Isotope: Sr ⁹⁰	Isotope: D-38
Activity: 40.83 μCi	Activity: 2.6 μCi
Bkg: 115 dpm	Reference: 9020 dpm
	+ 20% T216 to 10824dpm
Filter Position or Range:	2 3 4
Open Scale	N/A N/A N/A
Reference Reading:	1710 dpm
Net Reading:	1115 dpm
Acceptance Range (± 20%)	892 dpm / 1338 dpm

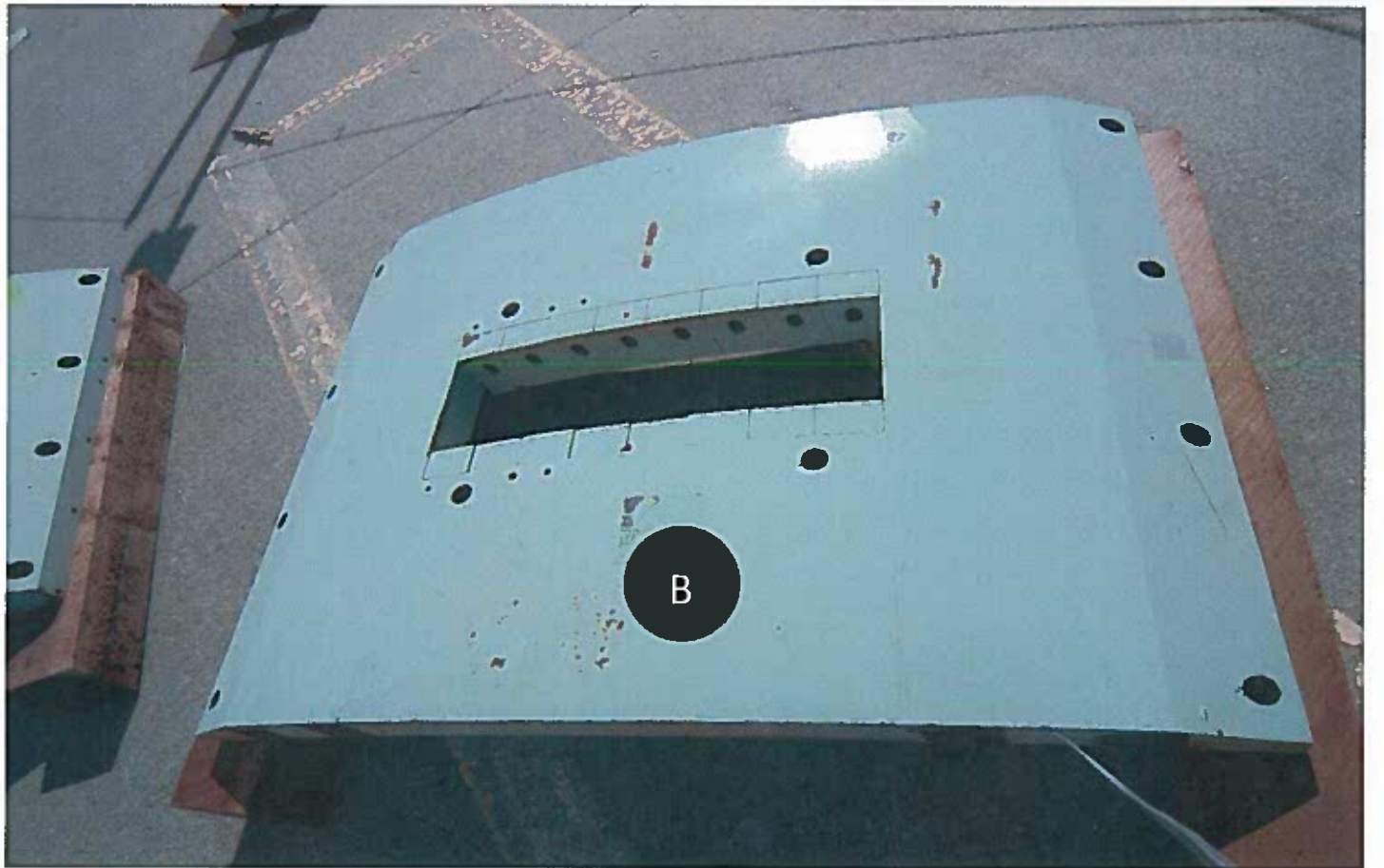
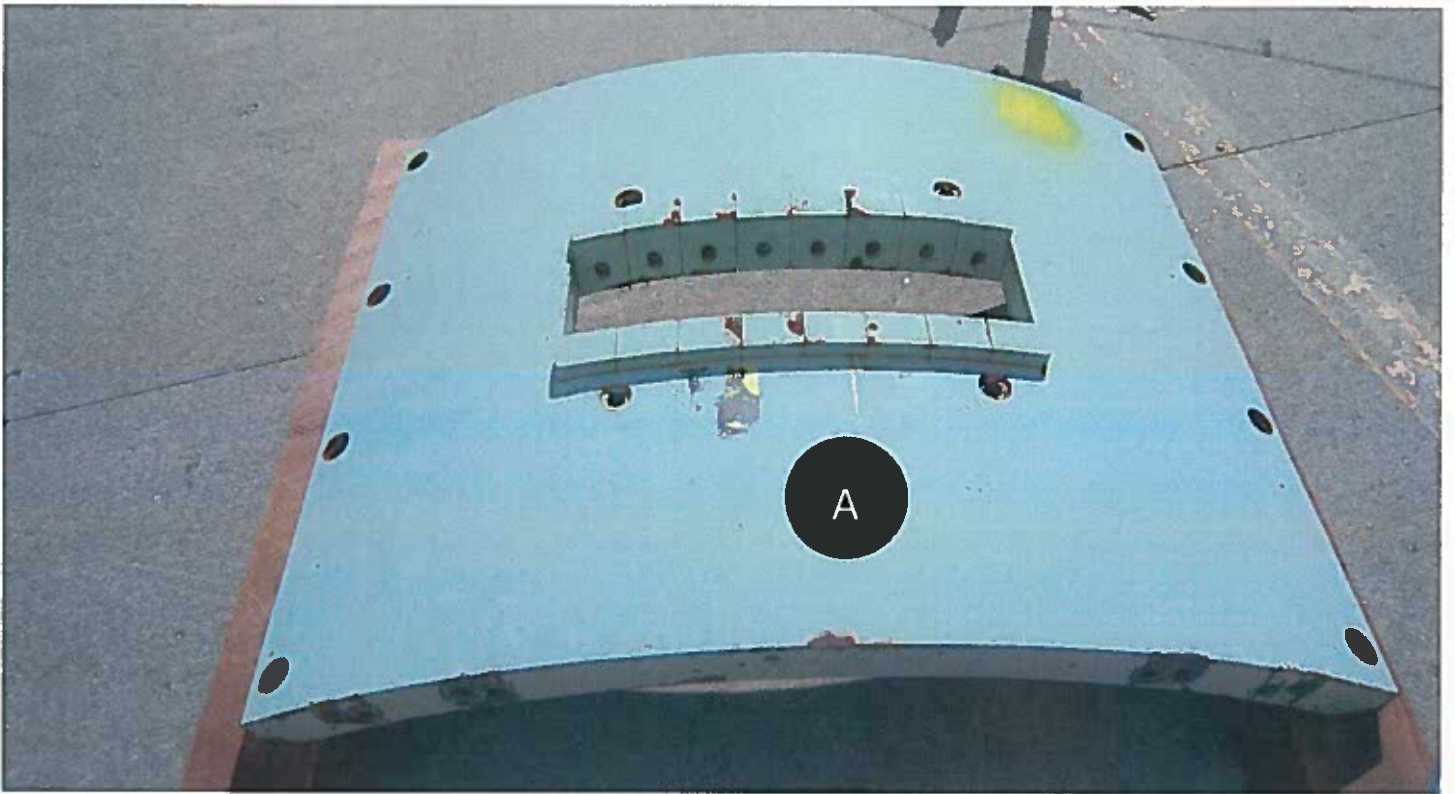
03 APR 19
Date Reference Readings Established

LAUREL J SHARISKY
RCT Name

Laurel J Sharisky
Signature

3316507
Z Number

[illegible]



LANSCCE Metals Clearance Log

Date/Time: 05.14.2019/ 0945 Photo File Name:	Item Barcode Numbers <div style="font-size: 2em; font-weight: bold;">29229521</div>
------------------------------------------------------------------	---------------------------------------------------------------------------------------------------

Item Description, including any process and historical knowledge

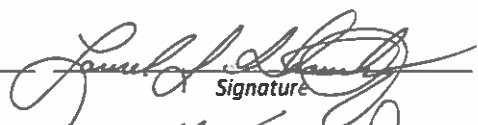


Alpha Package (365 lot):
 A1 = 300 lbs shield block
 A2 = 260 lbs shield block
 A3 = 4000 lbs shield block
 A4 = 1414 lbs shield block
 A5 = 2X75 lbs shield block (Weight not fully legible)

Evaluation

Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y

Comments



All items surveyed are shield blocks of various weights and sizes;
 All items were not in the direct path of the beam;

L. Sharisky <i>RCT Name</i>	 <i>Signature</i>	336582 <i>Z-Number</i>	21 MAY 19 <i>Date</i>
K. Neal <i>RCT Name</i>	 <i>Signature</i>	331301 <i>Z-Number</i>	5.21.19 <i>Date</i>
M. Duran <i>HPFC Reviewer</i>	 <i>Signature</i>	106440 <i>Z-Number</i>	9/11/19 <i>Date</i>

LANSC E Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 05.14.2019	Time: 0945	No. samples: 23
TA: 53	Building: 365	Room: Parking Lot

L. Sharisky		336582
RCT Name	Signature	Z Number
K. Neal		331301
RCT Name	Signature	Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7488	7488	01.08.2020	159	30%	117.05

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15028	15028	08.09.2019	73.2	115

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	81
2	71
3	79
4	71
5	64
Average	73.2

RP Tracking Number



29229521

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
1	A1 Top Side	241	Y [1-2]	79	Y
2	A1 Bottom Side	165	Y [3-4]	98	Y
3	A2 Top Side	181	Y [5-6]	69	Y
4	A2 Bottom Side	151	Y [7-8]	84	Y
5	A3 Top Side	240	Y [9-12]	66	Y
6	A3 Bottom Side	191	Y [13-15]	91.5	Y
7	A4 Top Side	265	Y [16-17]	79	Y
8	A4 Bottom Side	198	Y [18-19]	95	Y
9	A5 Top Side	228	Y [20-21]	78	Y
10	A5 Bottom Side	198	Y [22-23]	82	Y
N/A	End of Survey	N/A	N/A	N/A	N/A

LANSCCE Metals Clearance Log

[illegible]

PIC WPC-9550
5/14/2019 2:20:01 PM
Routine 1 ROUTINE 1 Batch ID: 29229521

Alpha MDA = 18.264 dpm Beta MDA = 16.019 dpm Gamma MDA = 881.510 dpm \times 442.98 dpm

ALPHA BKGD = 0.367 BETA BKGD = 1.000 GAMMA BKGD = 197.700
ALPHA EFF. = 0.2751 BETA EFF. = 0.3960 GAMMA EFF. = 0.0567
ALPHA F = 1.00 BETA F = 1.00 GAMMA F = 1.00
Count Time = 1.00 mins BKGND Count Time = 30.00 mins

SC#	ID	SAMPLE None	ALPHA CPM	BETA CPM	GAMMA CPM	ALPHA dpm/Sample	BETA dpm/Sample	GAMMA dpm/Sample
	Sample1	1.000E+00	0.000	2.000	175.000	-1.333E+00	2.525E+00	-4.000E+02
	Sample2	1.000E+00	0.000	0.000	203.000	-1.333E+00	-2.525E+00	9.340E+01
	Sample3	1.000E+00	0.000	7.000	172.000	-1.333E+00	1.515E+01	-4.529E+02
	Sample4	1.000E+00	0.000	5.000	190.000	-1.333E+00	1.010E+01	-1.357E+02
	Sample5	1.000E+00	0.000	2.000	188.000	-1.333E+00	2.525E+00	-1.709E+02
	Sample6	1.000E+00	0.000	7.000	191.000	-1.333E+00	1.515E+01	-1.181E+02
	Sample7	1.000E+00	0.000	0.000	184.000	-1.333E+00	-2.525E+00	-2.414E+02
	Sample8	1.000E+00	0.000	3.000	186.000	-1.333E+00	5.050E+00	-2.062E+02
	Sample9	1.000E+00	0.000	6.000	192.000	-1.333E+00	1.262E+01	-1.004E+02
	Sample10	1.000E+00	0.000	2.000	183.000	-1.333E+00	2.525E+00	-2.590E+02
	Sample11	1.000E+00	0.000	0.000	218.000	-1.333E+00	-2.525E+00	3.577E+02
	Sample12	1.000E+00	4.000	5.000	203.000	1.321E+01	1.010E+01	9.340E+01
	Sample13	1.000E+00	1.000	0.000	195.000	2.302E+00	-2.525E+00	-4.758E+01
	Sample14	1.000E+00	1.000	4.000	192.000	2.302E+00	7.575E+00	-1.004E+02
	Sample15	1.000E+00	1.000	6.000	186.000	2.302E+00	1.262E+01	-2.062E+02
	Sample16	1.000E+00	1.000	3.000	195.000	2.302E+00	5.050E+00	-4.758E+01
	Sample17	1.000E+00	0.000	5.000	187.000	-1.333E+00	1.010E+01	-1.886E+02
	Sample18	1.000E+00	0.000	3.000	195.000	-1.333E+00	5.050E+00	-4.758E+01
	Sample19	1.000E+00	1.000	0.000	221.000	2.302E+00	-2.525E+00	4.106E+02
	Sample20	1.000E+00	0.000	6.000	196.000	-1.333E+00	1.262E+01	-2.996E+01
	Sample21	1.000E+00	1.000	3.000	178.000	2.302E+00	5.050E+00	-3.471E+02
	Sample22	1.000E+00	0.000	3.000	201.000	-1.333E+00	5.050E+00	5.815E+01
	Sample23	1.000E+00	1.000	2.000	196.000	2.302E+00	2.525E+00	-2.996E+01

Counted By: [Signature] Reviewed By: [Signature] Date: 5.14.19

RP Tracking Number



29229521

All Smears < MDALimits

Channel: 214 Energy: 78.4 keV Counts: 30

Load Primary Spectrum

29229521.spc

Date:

5 Jun 2019

Time:

11:06:28 AM

Primary Spectrum #

1 of 1

☐ Use current calibration
 when loading new data

Calibration Check

Calibration Lines

Background

Stored Calibration Parameters

Using File Calibration or Default

Zero Offset

0.225

keV/Channel

0.3659

Load Second/Back Spectrum

PeakEasyLib

Any File

File Drag & Drop Permitted

 T Pb-214 Pb-214 P Bi-214 Ann 1 Bi-214 Bi-214 Bi-214 Bi-214
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Zero Offset

Gain Adjust

PeakEasy

Isotope Library

Isotope Search

Advanced Calibration

Radioactive Isotope

Background

Parents and Decay Chains

Th-232, U-238, K-40

Half-Life

NA

Curies / Gram

NA

Density (g/cc)

NA

Assumed Age

NA

Include All Daughters

☒

G Dose Rate / Ci @ 1m

2.36 Rem/yr

Include X-Rays

☒

Energy (keV)	Photo/Decay	Isotope	Decay Mode
1078.62	5.637e-003	Bi-212	Beta-
1093.90	1.425e-003	Tl-208	Beta-
1095.68	1.290e-003	Ac-228	Beta-
1103.64	1.000e-003	Bi-214	Beta-
1110.61	2.850e-003	Ac-228	Beta-
1120.29	1.510e-001	Bi-214	Beta-
1133.66	2.480e-003	Bi-214	Beta-
1153.52	1.390e-003	Ac-228	Beta-
1155.19	1.630e-002	Bi-214	Beta-
1207.68	4.510e-003	Bi-214	Beta-

Save Library

Clear Last

Clear Lines



Los Alamos
NATIONAL LABORATORY

EST. 1943

RadEye SX / L44-3 Performance Test Log

TA: <u>S3</u>	Bldg: <u>312</u>	Rm: <u>1214</u>	Instrument PN: <u>15029</u>	Cal Due Date: <u>8/19/19</u>
Model: <u>RadEye SX / Ludlum 44-3</u>				Count time: 60 seconds

COPY

Reference Readings

Check Sources	Isotope	II#	Activity (cpm)	60 Second Bkg (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Expected -20% (cpm x 0.8)	Expected +20% (cpm x 1.2)
	<u>Sr90</u>	<u>K323</u>	<u>40.2366</u>	<u>256</u>	<u>12,100</u>	<u>11844</u>	<u>9,475</u>	<u>14213</u>

Date Reference Readings Established: 11/14/18 RCT name: D. Garin Signature: [Signature] Z-number: 324201

Performance Test Results

Date/Time	Background (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Pass / Fail	RCTZ Number	RCT Name	RCT Signature	Comments
11-11-0800	260	11800	11540	PASS	324200	D. Garin	[Signature]	
2-12-19 1030	318	11912	11582	PASS	331239	B. Adams	[Signature]	
4-11-19 0130	310	11900	11590	PASS	324200	D. Garin	[Signature]	
4-2-19 0720	314	11800	11486	PASS	315139	M. Muscarella	[Signature]	
4-3-19 0805	291	11700	11409	PASS	315139	M. Muscarella	[Signature]	
4-4-19 0735	312	11700	11388	PASS	315139	M. Muscarella	[Signature]	
4-16-19 0735	308	11600	11272	PASS	315139	M. Muscarella	[Signature]	
4-21-19 0735	271	11800	11535	Pass	324200	J. Li	[Signature]	So.1
5-13-19 01230	288	11900	11642	PASS	331582	L. SHARISKY	[Signature]	
5-14-19 0800	277	11900	11623	PASS	331582	L. SHARISKY	[Signature]	METAL CLEARANCE



BETA/GAMMA SURVEY INSTRUMENT PERFORMANCE TEST LOG

Instrument Manufacture: Eberline Model: ESP-1 HSE# (P/N): 007485 Cal. Due Date: 01/08/20 Location: TA-53, MPF-3R, Rm. 141

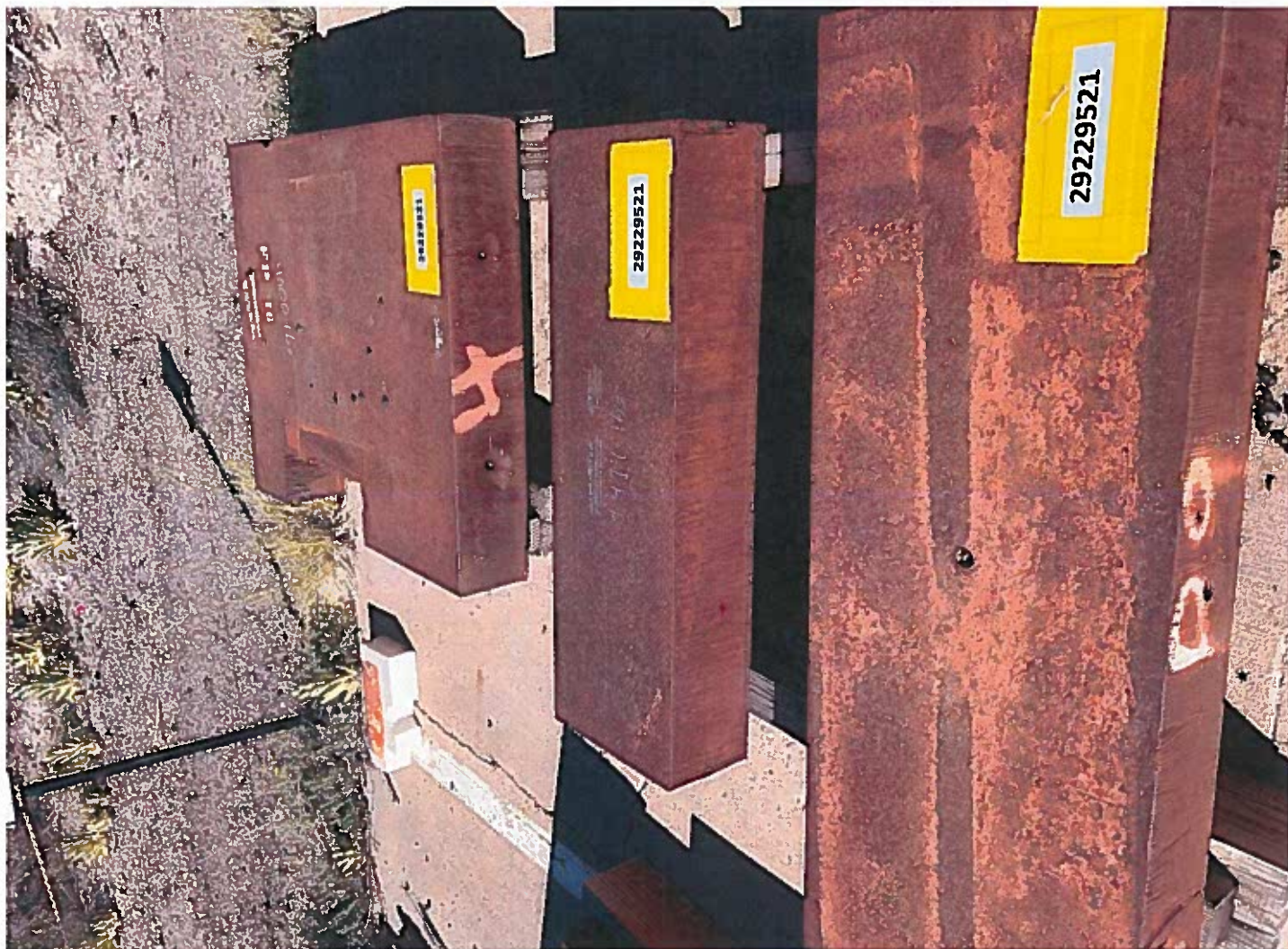
Reference Source		Filter Position or Range:		Open Scale		Check Source	
ID:	_____	Reference Reading:	_____	dpm	_____	ID #:	_____
Isotope:	_____	Net Reading:	_____	dpm	_____	Isotope:	_____
Activity:	_____	Acceptance Range ($\pm 20\%$)	_____	dpm/1333 dpm	_____	Activity:	_____
Bkg:	_____		_____		_____	Reference:	_____
K-323	Sr ⁹⁰	1310	1115	892	D38-00	D-38	
40.83 μ ci					2.6 μ ci		
K15 dpm					9020 dpm		
(200-300 cts)					$\pm 20\%$ 7216 to 10872 dpm		

03 APR 19
Date Reference Readings Established

LAUREL J SHARSKY
Signature

3316507
Z Number

[illegible]



LANSCCE Metals Clearance Log

Date/Time: 05.15.2019 0805	Item Barcode Numbers 29229538
Photo File Name:	

Item Description, including any process and historical knowledge



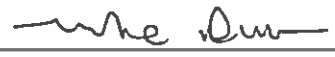
Bravo Package (365 lot):
 B1 = 970 lbs shield block
 B2 = 2430 lbs shield block
 B3 = 2975 lbs shield block
 B4 = 2935 lbs shield block
 B5 = 1070 lbs shield block
 B6 = 1070 lbs shield block

Evaluation

Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y

Comments



All items surveyed are shield blocks of varies weights and sizes.
 All items were not in the direct path of the beam.

L. Sharisky RCT Name	 Signature	336582 Z-Number	22 MAY 19 Date
K. Neal RCT Name	 Signature	331301 Z-Number	5.21.19 Date
M. Duran HPFC Reviewer	 Signature	106440 Z-Number	5/11/19 Date

LANSCCE Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 05.15.2019	Time: 0805	No. samples: 24
TA: 53	Building: 365	Room: Parking Lot

L. Sharisky		336582
RCT Name	Signature	Z Number
K. Neal		331301
RCT Name	Signature	Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7488	7488	01.08.20	195	30%	128.55

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15028	15028	08.09.19	75.8	118

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	81
2	66
3	72
4	83
5	77
Average	75.8

RP Tracking Number



29229538

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
1	B1 – Top Side	225	Y [1-2]	71	Y
2	B1 – Bottom Side	197	Y [3-4]	94	Y
3	B2 – Top Side	220	Y [5-6]	70	Y
4	B2 – Bottom Side	181	Y [7-8]	80	Y
5	B3 – Top Side	230	Y [9-11]	81	Y
6	B3 – Bottom Side	180	Y [12-14]	75	Y
7	B4 – Top Side	227	Y [15-17]	67	Y
8	B4 – Bottom Side	184	Y [18-20]	78	Y
9	B5 – Top Side	208	Y [21]	66	Y
10	B5 – Bottom Side	150	Y [22]	79	Y
11	B6 – Top Side	211	Y [23]	78	Y

LANSCCE Metals Clearance Log

[illegible]

Sample Report

Batch ID:	TA-53 Samples - 201905170840	Count Date:	5/17/2019 8:40:02AM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7217	Operating Volts:	1335
BC#:	29229538	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229538

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 236.39$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190517084002-E1	0.00	0.00	8.70	9.45	5.67	16.97	145.45
20190517084303-E2	0.00	0.00	8.70	4.95	4.70	16.97	-13.64
20190517084413-E3 alpha exceeds mda	9.64	5.57	8.70	4.95	4.70	16.97	350.00
20190517084523-E4	0.00	0.00	8.70	-1.80	2.62	16.97	31.82
20190517084643-E5	6.43	4.55	8.70	13.95	6.51	16.97	202.27
20190517084753-E6	0.00	0.00	8.70	7.20	5.21	16.97	122.73
20190517084903-E7	0.00	0.00	8.70	-1.80	2.62	16.97	134.09
20190517085013-E8	0.00	0.00	8.70	-1.80	2.62	16.97	202.27
20190517085133-E9	0.00	0.00	8.70	4.95	4.70	16.97	-161.36
20190517085243-E10	0.00	0.00	8.70	-1.80	2.62	16.97	-309.09
20190517085353-E11	3.21	3.21	8.70	-4.05	1.35	16.97	-36.36
20190517085503-E12	0.00	0.00	8.70	-4.05	1.35	16.97	225.00
20190517085613-E13	3.21	3.21	8.70	4.95	4.70	16.97	-13.64
20190517085733-E14	3.21	3.21	8.70	-4.05	1.35	16.97	-47.73
20190517085843-E15	0.00	0.00	8.70	4.95	4.70	16.97	168.18
20190517085953-E16	0.00	0.00	8.70	-1.80	2.62	16.97	-161.36
20190517090103-E17	0.00	0.00	8.70	-4.05	1.35	16.97	43.18
20190517090224-E18	0.00	0.00	8.70	2.70	4.12	16.97	-2.27

Batch ID: TA-53 Samples - 201905170840
Group: E
Device: S5XLBG Unit2
Batch Key: 7217
BC#: 29229538
Bldg:

Count Date: 5/17/2019 8:40:02AM
Count Minutes: 1.00
Count Mode: Simultaneous
Operating Volts: 1335
Gamma Volts: 828
Selected Geometry 5/16" Stainless Steel

Background (cpm)		Efficiency (%)	
Alpha Rate:	0.00 ± 0.00	Alpha:	31.11 ± 0.11
Beta Rate:	1.80 ± 0.60	Beta:	44.44 ± 0.11
Gamma Rate:	155.20 ± 5.57	Gamma:	8.80

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190517090334-E19	0.00	0.00	8.70	2.70	4.12	16.97	-47.73
20190517090444-E20	0.00	0.00	8.70	-4.05	1.35	16.97	190.91
20190517090554-E21	0.00	0.00	8.70	0.45	3.46	16.97	293.18
20190517090714-E22	0.00	0.00	8.70	-1.80	2.62	16.97	43.18
20190517090824-E23	3.21	3.21	8.70	-1.80	2.62	16.97	54.55
20190517090934-E24	3.21	3.21	8.70	-4.05	1.35	16.97	202.27

RP Tracking Number

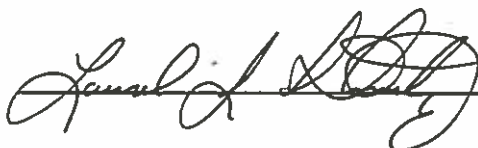


29229538

~~All Smears~~ < MDALimits

RECOUNTING SMEARS #3 + #21

Reviewed by:

 SHARKEY

Page 2 of 2

C:\Users\Canberra\AppData\Local\Temp\LANL sample report {5D6EBBE6-C4F,

Print Date 5/17/2019
Print Time 9:10:50AM

Sample Report

Batch ID: TA-53 Samples - 201905170936
Group: E
Device: S5XLBG Unit2
Batch Key: 7218
BC#:
Bldg:

Count Date: 5/17/2019 9:36:04AM
Count Minutes: 1.00
Count Mode: Simultaneous
Operating Volts: 1335
Gamma Volts: 828
Selected Geometry 5/16" Stainless Steel

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\tau = 236.39$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190517093604-E3	0.00	0.00	8.70	-1.80	2.62	16.97	65.91
20190517093735-E21	0.00	0.00	8.70	-4.05	1.35	16.97	156.82

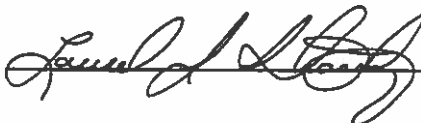
RP Tracking Number



29229538

All Smears < MDALimits

Reviewed by:

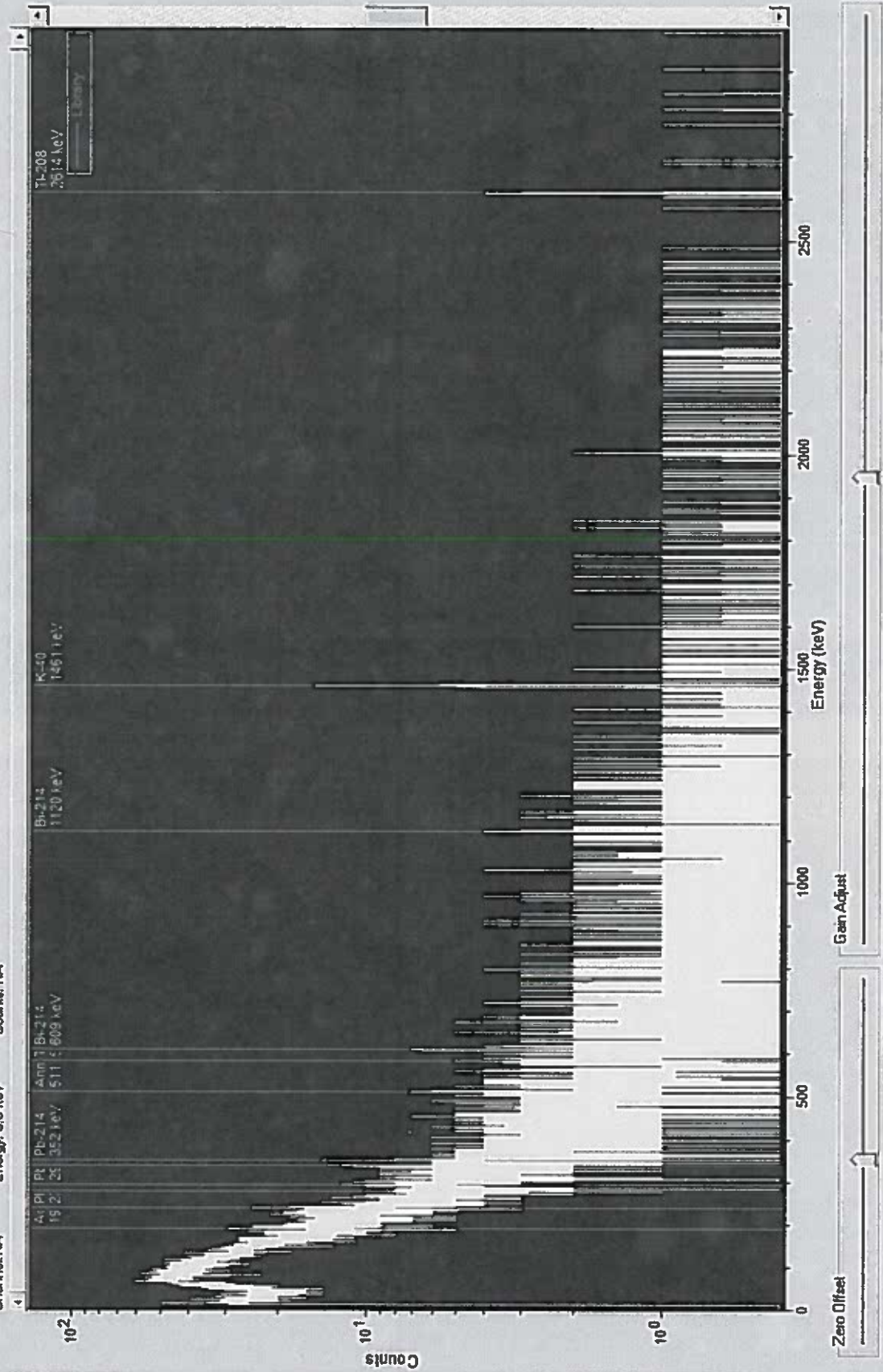
 SHARKEY

Channel: NA Energy: 0.0 keV Counts: NA
Live Time: 257.2 sec Dead Time: 0.32 % Neutron Counts: NA

Load Primary Spectrum
29229538.spc
Date: 5 Jun 2019 Time: 11:05:28 AM
Primary Spectrum # 1 of 1
☐ Use current calibration when loading new data

Calibration Check
Calibration Lines Background Show
Stored Calibration Parameters
Using File Calibration or Default
Zero Offset 0.225 keV/Channel
0.3859

Load Second/Back Spectrum
PeakEasyLib Any File
File Drag & Drop Permitted



PeakEasy Isotope Library Isotope Search Advanced Calibration

Radioactive Isotopes
Background Th-232, U-238, K-40
Half-Life NA
Assumed Age NA
G Dose Rate / Ci @ 1m 2.36 Rem/yr
Curies / Gram NA Density (g/cc) NA
☒ Include All Daughters
☒ Include X-Rays

Energy (keV)	PhotoDecay	Isotope	Decay Mode
205.31	2.355e-003	U-235	Alpha
209.25	3.890e-002	Ac-228	Beta-
215.98	2.535e-003	Th-228	Alpha
233.36	1.105e-003	Tl-208	Beta-
235.97	5.701e-003	Th-227	Alpha
238.63	4.330e-001	Pb-212	Beta-
240.99	4.100e-002	Ra-224	Alpha
242.00	7.429e-002	Pb-214	Beta-
252.61	2.494e-003	Tl-208	Beta-
256.25	1.250e-003	Th-227	Alpha

Save Library Clear List Clear Lines



BETA/GAMMA SURVEY INSTRUMENT PERFORMANCE TEST LOG

Instrument Manufacture: Eberline Model: ESP-1 HSE# (P/N): 007480 Cal. Due Date: 01/08/20 Location: TA-53, MPF-3R, Rm. 141

Reference Source		Filter Position or Range:		Open Scale	Check Source	
ID:	Isotope:	Reference Reading:	Net Reading:	Acceptance Range ($\pm 20\%$)	ID #:	Isotope:
K-323	Sr ⁹⁰	1310 dpm	1115 dpm	892 dpm / 1338 dpm	D38-00	D-38
Activity: 40.83 μ ci					Activity: 2.6 μ ci	
Bkg: 15 dpm (200 - 300 cps)					Reference: 9020 dpm $\pm 20\%$ 7216 to 10824 dpm	

03 APR 19
Date Reference Readings Established

LAUREL J SHARSKY
RCT Name

Laurel J Sharsky
Signature

3346587
Z Number

[illegible]



RadEye SX/L44-3 Performance Test Log

TA: <u>S3</u>	Bldg: <u>3R</u>	Rm: <u>2141</u>	Instrument PN: <u>15029</u>	Cal Due Date: <u>8/9/19</u>
Model: <u>RadEye SX/Ludlum 44-3</u>				Count time: 60 seconds

COPY

Reference Readings

Check Sources	Isotope	ID#	Activity (dpm)	60 Second Bkg (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Expected -20% (cpm x 0.8)	Expected +20% (cpm x 1.2)
	<u>Sr 90</u>	<u>K323</u>	<u>40,236</u>	<u>256</u>	<u>12,100</u>	<u>11844</u>	<u>9,475</u>	<u>14213</u>

Date Reference Readings Established: 11/14/18 RCT name: D. Goin Signature: [Signature] Z-number: 324206

Performance Test Results

Performance Test Results										Background / Sample Count Time: 60 seconds	
Date/Time	Background (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Pass/Fail	RCTZ Number	RCT Name	RCT Signature	Comments			
11/16/18 0800	260	11800	11540	PASS	324206	D. Goin	[Signature]				
2/12/19 1030	318	11912	11582	PASS	331239	B. Adams	[Signature]				
9/11/19 1300	310	11900	11590	PASS	324206	D. Goin	[Signature]				
4-2-19/0720	314	11800	11486	PASS	315139	M. Muscarella	[Signature]				
4-3-19/0805	291	11700	11409	PASS	315139	M. Muscarella	[Signature]				
1-4-19/0735	312	11700	11388	PASS	315139	M. Muscarella	[Signature]				
4-16-19/0735	308	11600	11292	PASS	315139	M. Muscarella	[Signature]				
4/21/19 0800	271	11800	11529	Det	324206	J. U.	[Signature]	Soil			
5/13/19 01230	258	11900	11642	PASS	331582	L. SHARKEY	[Signature]				
5.14.19 0800	277	11900	11623	PASS	331582	L. SHARKEY	[Signature]	METAL CLEARANCE			
5.15.19 0800	291	12100	11809	PASS	331582	L. SHARKEY	[Signature]	METAL CLEARANCE			



LANSCCE Metals Clearance Log

Date/Time: 05.15.2019 0900	Item Barcode Numbers 29229539
Photo File Name:	

Item Description, including any process and historical knowledge




Charlie Package (365 Lot):
C1 = XX20 lbs shield block
C2 = 4600 lbs shield block
C3 = 1520 lbs shield block
Indistinguishable weight represented by "X"

Evaluation

Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y

Comments

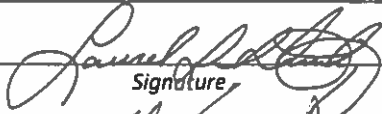
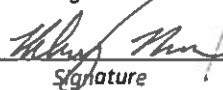
All items surveyed are shield blocks of varies weights and sizes.
All items were not in the direct path of the beam.

L. Sharisky RCT Name	 Signature	336582 Z-Number	21 MAY 19 Date
K. Neal RCT Name	 Signature	331301 Z-Number	5.21.19 Date
M. Duran HPFC Reviewer	 Signature	106440 Z-Number	5/11/19 Date

LANSCCE Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 05.15.2019	Time: 0900	No. samples: 16
TA: 53	Building: 365	Room: Parking Lot

L. Sharisky		336582
RCT Name	Signature	Z Number
K. Neal		331301
RCT Name	Signature	Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7488	7488	01.08.20	193	30%	127.94

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15028	15028	08.09.19	64.2	101

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	64
2	56
3	78
4	63
5	60
Average	64.2

RP Tracking Number




29229539

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
1	C1 – Top Side	224	Y [1-2]	69	Y
2	C1 – Bottom Side	178	Y [3-4]	91	Y
3	C2 – Top Side	223	Y [5-7]	50	Y
4	C2 – South Side	180	Y [8-9]	60	Y
5	C2 – Bottom Side	212	Y [10-12]	77	Y
6	C3 – Top Side	230	Y [13-14]	69	Y
7	C3 – Bottom Side	185	Y [15-16]	85	Y
N/A	END OF SURVEY	N/A	N/A	N/A	N/A
↑	↑	↑	↑	↑	↑
↓	↓	↓	↓	↓	↓
N/A	N/A	N/A	N/A	N/A	N/A

LANSCCE Metals Clearance Log

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
N/A	N/A	N/A	N/A	N/A	N/A
↑	↑ RP Tracking Number  29229539	↑	↑	↑	↑
↓	↓	↓	↓	↓	↓
N/A	N/A	N/A	N/A	N/A	N/A

Sample Report

Batch ID:	TA-53 Samples - 201905170942	Count Date:	5/17/2019 9:42:25AM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit	Count Mode:	Simultaneous
Batch Key:	7219	Operating Volts:	1335
BC#:	29229539	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229539

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

mon = 236.39

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190517094225-E1	3.21	3.21	8.70	7.20	5.21	16.97	-150.00
20190517094355-E2	0.00	0.00	8.70	2.70	4.12	16.97	-2.27
20190517094506-E3	0.00	0.00	8.70	-1.80	2.62	16.97	-138.64
20190517094616-E4	0.00	0.00	8.70	-4.05	1.35	16.97	43.18
20190517094736-E5	3.21	3.21	8.70	4.95	4.70	16.97	-104.55
20190517094846-E6	3.21	3.21	8.70	2.70	4.12	16.97	145.45
20190517094956-E7	0.00	0.00	8.70	2.70	4.12	16.97	327.27
20190517095106-E8	0.00	0.00	8.70	-1.80	2.62	16.97	-127.27
20190517095226-E9	3.21	3.21	8.70	0.45	3.46	16.97	-36.36
20190517095336-E10	3.21	3.21	8.70	4.95	4.70	16.97	122.73
20190517095446-E11	0.00	0.00	8.70	2.70	4.12	16.97	293.18
20190517095556-E12	0.00	0.00	8.70	2.70	4.12	16.97	-150.00
20190517095706-E13	6.43	4.55	8.70	0.45	3.46	16.97	-70.45
20190517095826-E14	3.21	3.21	8.70	-4.05	1.35	16.97	-184.09
20190517095936-E15	0.00	0.00	8.70	-1.80	2.62	16.97	-275.00
20190517100046-E16	0.00	0.00	8.70	0.45	3.46	16.97	-229.55

Reviewed by:

[Signature]

All Smears < MDALimits

EXCEPT SMEARS #7 + #11

Sample Report

Batch ID: TA-53 Samples - 201905171052
Group: E
Device: S5XLBG Unit2
Batch Key: 7223
BC#:
Bldg:

Count Date: 5/17/2019 10:52:11AM
Count Minutes: 1.00
Count Mode: Simultaneous
Operating Volts: 1335
Gamma Volts: 828
Selected Geometry 5/16" Stainless Steel

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

MDA = 236.39

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190517105211-E7	0.00	0.00	8.70	4.95	4.70	16.97	65.91
20190517105342-E11	0.00	0.00	8.70	-1.80	2.62	16.97	213.64

RP Tracking Number



29229539

All Smears < MDA Limits

Reviewed by: _____

[Signature]

Channel: NA Energy: 0.0 keV Counts: NA

Live Time: 118.1 sec Dead Time: 0.29 % Neutron Counts: NA

Load Primary Spectrum

29229539.apc

Date: 5Jun-2019

Time: 11:06:29 AM

Primary Spectrum #

< 1 of 1 >

☐ Use current calibration when loading new data

Calibration Check

Calibration Lines Background

Stored Calibration Parameters

Using File Calibration or Default

Zero Offset: 0.225 keV/Channel

0.3659

Load Second/Back Spectrum

PeakEasyLib

File Drop & Drop Permitted

Zero Offset

Gain Adjust

PeakEasy

Isotope Library

Isotope Search

Advanced Calibration

Radioactive Isotope

Background

Half-Life: NA

Assumed Age: NA

G Dose Rate / Ci @ 1m: NA

Parents and Decay Chains

Th-232, U-238, K-40

Curies / Gram: NA

Density (g/cc): NA

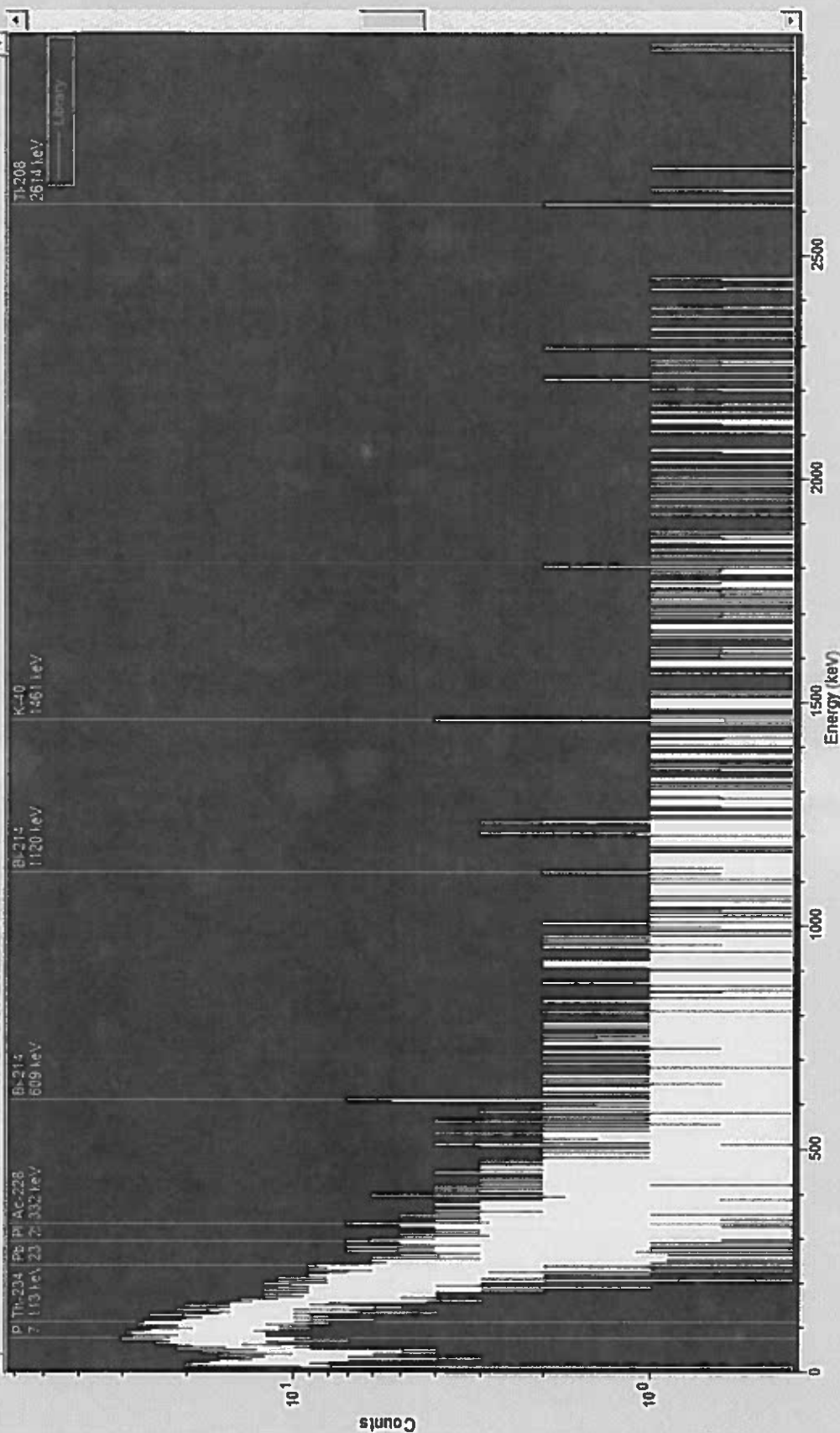
☒ Include All Daughters☒ Include X-Rays

Energy (keV)	Photo/Decay	Isotope	Decay Mode
609.31	4.610e-001	Bi-214	Beta-
238.63	4.330e-001	Pb-212	Beta-
351.93	3.759e-001	Pb-214	Beta-
2614.45	3.563e-001	Tl-208	Beta-
583.19	3.035e-001	Tl-208	Beta-
911.20	2.580e-001	Ac-228	Beta-
295.22	1.930e-001	Pb-214	Beta-
77.11	1.750e-001	Pb-212	Bi X-Ray
968.97	1.580e-001	Ac-228	Beta-
1764.49	1.540e-001	Ra-214	Beta-

Save Library

Clear Last

Clear Lines



BETA/GAMMA SURVEY INSTRUMENT PERFORMANCE TEST LOG

Instrument Manufacture: Eberline Model: ESP-1 HSE# (P/N): 201483 Cal. Due Date: 01/08/20 Location: TA-53, MPF-3R, Rm. 141

[illegible]

03 APR 19
Date Reference Readings Established

LAUREL J SHARSKY
RCT Name

Laurel J Sharsky
Signature

3316581
Z Number

[illegible]



Los Alamos
NATIONAL LABORATORY

EST. 1943

RadEye SX / L44-3 Performance Test Log

TA: <u>S3</u>	Bldg: <u>312</u>	Rm: <u>214</u>	Instrument PN: <u>15023</u>	Cal Due Date: <u>8/9/19</u>	Count time: 60 seconds
Model: RadEye SX / Ludlum 44-3					

COPY

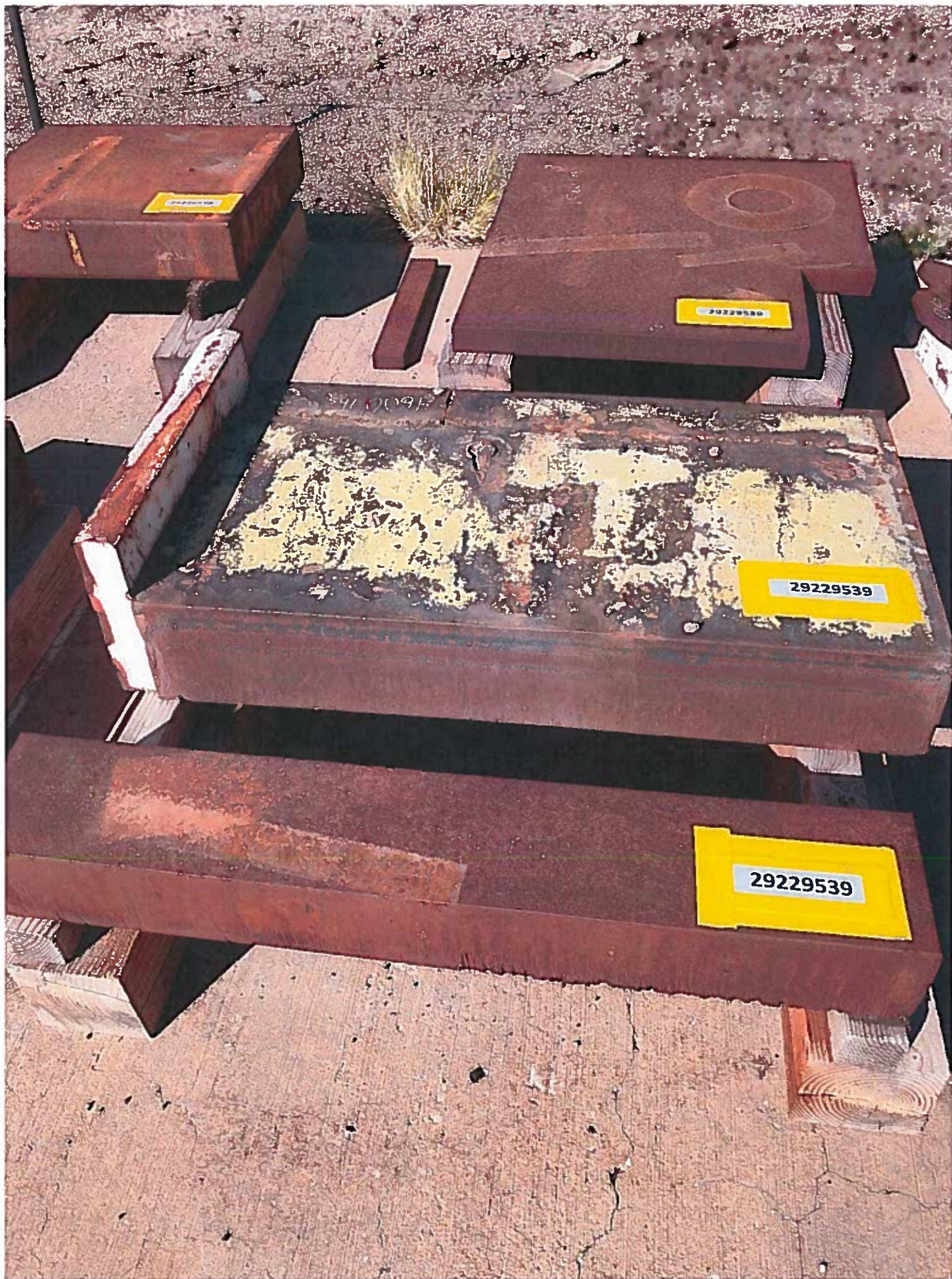
Reference Readings

Check Sources	Isotope	II/I	Activity (dpm)	60 Second Bkg (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Expected -20% (cpm x 0.8)	Expected +20% (cpm x 1.2)
	<u>Sr90</u>	<u>4323</u>	<u>40.2366</u>	<u>256</u>	<u>12100</u>	<u>11844</u>	<u>9475</u>	<u>14213</u>

Date Reference Readings Established: 11/14/18 RCT name: D. Garin Signature: [Signature] Z-number: 324201

Performance Test Results

Background / Sample Count Time: 60 seconds									
Date/Time	Background (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Pass/Fail	RCTZ Number	RCT Name	RCT Signature	Comments	
1-16-19 @ 0800	260	11800	11540	PASS	324200	D. Garin	[Signature]		
2-12-19 @ 1030	318	11912	11582	PASS	331239	B. Adams	[Signature]		
4-11-19 @ 1300	310	11900	11590	PASS	324200	D. Garin	[Signature]		
4-2-19 @ 0720	314	11800	11486	PASS	315139	M. Muscarella	[Signature]		
4-3-19 @ 0805	291	11700	11409	PASS	315139	M. Muscarella	[Signature]		
4-14-19 @ 0735	312	11700	11388	PASS	315139	M. Muscarella	[Signature]		
4-16-19 @ 0755	308	11600	11292	PASS	315139	M. Muscarella	[Signature]		
4-25-19 @ 0600	271	11800	11527	PASS	31720	J. V.	[Signature]	So.1	
5-13-19 @ 1230	268	11900	11642	PASS	331582	L. SHARISKY	[Signature]		
5-14-19 @ 0800	277	11900	11623	PASS	331582	L. SHARISKY	[Signature]	METAL CLEARANCE	
5-15-19 @ 0800	291	12100	11809	PASS	331582	L. SHARISKY	[Signature]	METAL CLEARANCE	



LANSCCE Metals Clearance Log

Date/Time: 05.15.2019 1000	Item Barcode Numbers
Photo File Name:	29229540

Item Description, including any process and historical knowledge




Delta Package (365 Lot):
D1 – 600 lbs shield block
D2 – 1942 lbs shield block
D3 – 975 lbs shield block
D4 – 3750 lbs shield block
D5 – 1400 lbs shield block

Evaluation

Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y

Comments

All items surveyed are shield blocks of varies weights and sizes.
All items were not in the direct path of the beam.

L. Sharisky RCT Name	 Signature	336582 Z-Number	21 MAY 19 Date
K. Neal RCT Name	 Signature	331301 Z-Number	5.21.19 Date
M. Duran HPFC Reviewer	 Signature	106440 Z-Number	5/11/19 Date

LANSCCE Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 05.15.2019	Time: 1000	No. samples: 22
TA: 53	Building: 365	Room: Parking Lot

L. Sharisky		336582
RCT Name	Signature	Z Number
K. Neal		331301
RCT Name	Signature	Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7488	7488	01.08.20	192	30%	127.64

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15028	15028	08.09.19	67.8	107

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	68
2	69
3	61
4	67
5	74
Average	67.8

RP Tracking Number



29229540

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
1	D1 – Top Side	216	Y [1-2]	72	Y
2	D1 – Bottom Side	167	Y [3-4]	86	Y
3	D2 – Top Side	208	Y [5-6]	54	Y
4	D2 – Bottom Side	171	Y [7-8]	77	Y
5	D3 – Top Side	230	Y [9-10]	69	Y
6	D3 – Bottom Side	191	Y [11-12]	88	Y
7	D4 – Top Side	235	Y [13-15]	68	Y
8	D4 – Bottom Side	198	Y [16-18]	70	Y
9	D5 – Top Side	228	Y [19-20]	78	Y
10	D5 – Bottom Side	207	Y [21-22]	71	Y
N/A	END OF SURVEY	N/A	N/A	N/A	N/A

LANSCCE Metals Clearance Log

[illegible]

Sample Report

Batch ID:	TA-53 Samples - 201905171058	Count Date:	5/17/2019 10:58:39AM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7224	Operating Volts:	1335
BC#:	29229540	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229540

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

MDA = 236.39

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190517105839-E1	0.00	0.00	8.70	4.95	4.70	16.97	134.09
20190517110010-E2	0.00	0.00	8.70	0.45	3.46	16.97	43.18
20190517110120-E3	0.00	0.00	8.70	-4.05	1.35	16.97	-47.73
20190517110230-E4	0.00	0.00	8.70	-1.80	2.62	16.97	190.91
20190517110350-E5	0.00	0.00	8.70	0.45	3.46	16.97	77.27
20190517110500-E6	3.21	3.21	8.70	2.70	4.12	16.97	202.27
20190517110610-E7	3.21	3.21	8.70	2.70	4.12	16.97	88.64
20190517110720-E8	0.00	0.00	8.70	0.45	3.46	16.97	-47.73
20190517110840-E9	0.00	0.00	8.70	-4.05	1.35	16.97	225.00
20190517110950-E10	0.00	0.00	8.70	2.70	4.12	16.97	293.18
20190517111100-E11	0.00	0.00	8.70	7.20	5.21	16.97	88.64
20190517111210-E12	0.00	0.00	8.70	0.45	3.46	16.97	100.00
20190517111320-E13	0.00	0.00	8.70	-1.80	2.62	16.97	-93.18
20190517111440-E14	0.00	0.00	8.70	-1.80	2.62	16.97	-150.00
20190517111550-E15	3.21	3.21	8.70	-4.05	1.35	16.97	134.09
20190517111701-E16	0.00	0.00	8.70	-4.05	1.35	16.97	236.36
20190517111811-E17	0.00	0.00	8.70	-1.80	2.62	16.97	134.09
20190517111931-E18	0.00	0.00	8.70	0.45	3.46	16.97	225.00

Batch ID:	TA-53 Samples - 201905171058	Count Date:	5/17/2019 10:58:39AM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7224	Operating Volts:	1335
BC#:	29229540	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

MDA = 236.39

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190517112041-E19	0.00	0.00	8.70	2.70	4.12	16.97	179.55
20190517112151-E20	0.00	0.00	8.70	4.95	4.70	16.97	-2.27
20190517112301-E21	0.00	0.00	8.70	2.70	4.12	16.97	179.55
20190517112411-E22	0.00	0.00	8.70	2.70	4.12	16.97	565.91

RP Tracking Number



29229540

All Smears < MDALimits

* Smears # 10, 16 & 22 recounted.
Recount results listed on following page.

Reviewed by:

[Signature]

Sample Report

Batch ID: TA-53 Samples - 201905171133
Group: E
Device: S5XLBG Unit2
Batch Key: 7227

Count Date: 5/17/2019 11:33:11AM
Count Minutes: 1.00
Count Mode: Simultaneous
Operating Volts: 1335
Gamma Volts: 828
Selected Geometry 5/16" Stainless Steel

Background (cpm)			Efficiency (%)		
Alpha Rate:	0.00	± 0.00	Alpha:	31.11	± 0.11
Beta Rate:	1.80	± 0.60	Beta:	44.44	± 0.11
Gamma Rate:	155.20	± 5.57	Gamma:	8.80	

MDA = 236.39

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190517113311-E10	0.00	0.00	8.70	4.95	4.70	16.97	43.18
20190517113441-E16	0.00	0.00	8.70	-4.05	1.35	16.97	-13.64
20190517113552-E22	0.00	0.00	8.70	-1.80	2.62	16.97	-93.18

RP Tracking Number



29229540

All Smears < MDA Limits

Reviewed by:

Load Primary Spectrum

2019_07_15_27_400_2929540
ReCount.CHN

Date: 26-Jun-2019 Time: 12:36:23 PM

Primary Spectrum #

< 1 of 1 >

Use current calibration when loading new data

Calibration Check

Calibration Lines

Background ▼

Show

Stored Calibration Parameters

Using File Calibration or Default ▼

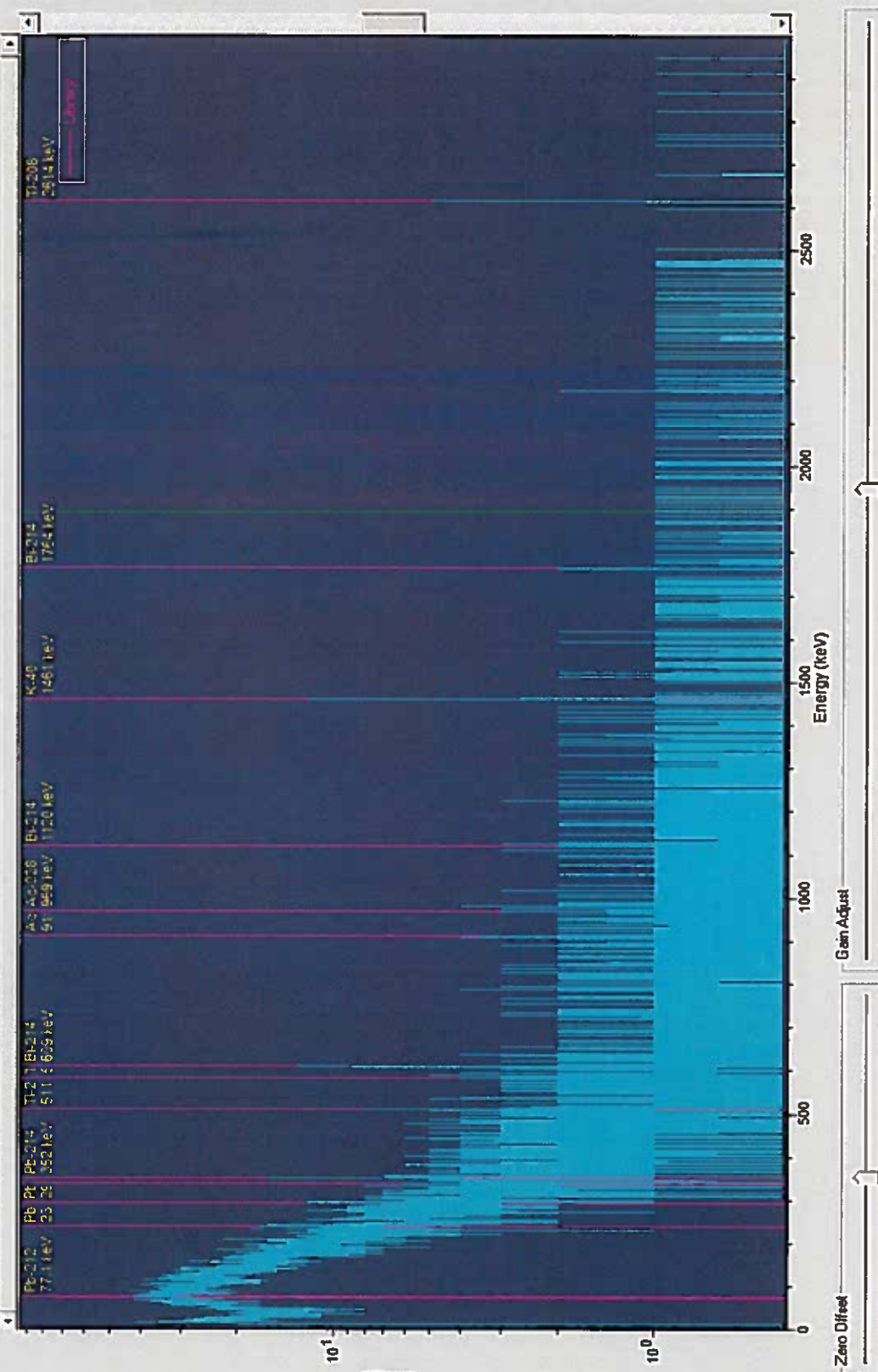
Zero Offset 0.225

key/Channel 0.3659

Load Second/Back Spectrum

PeakEasyLib Any File

File Drag & Drop Permitted



Peak/Easy	Nuclide Library	Nuclide Search	Advanced Calibration
Radioactive Nuclide	▼	Parents and Decay Chains	
Background	▼	Th-232, U-238, K-40	
Half-Life	NA	Curies / Gram	NA
Assumed Age	NA	Density (g/cc)	NA
G Dose Rate / Ci @ 1m	NA	<input checked="" type="checkbox"/> Include All Daughters	
		<input checked="" type="checkbox"/> Include X-Rays	

Energy (keV)	PhotoDecay	Nuclide	Decay Mode
295.22	1.930e-001	Pb-214	Beta-
77.11	1.750e-001	Pb-212	Beta-Ray
968.97	1.580e-001	Ac-228	Beta-
175.49	1.540e-001	Pb-214	Beta-
1120.39	1.510e-001	Pb-214	Beta-
338.32	1.127e-001	Ac-228	Beta-
150.83	1.057e-001	K-40	HA
718.1	1.040e-001	Pb-212	Beta-Ray
510.77	8.124e-002	Tl-208	Beta-
77.11	7.988e-002	Pb-214	Beta-Ray

Los Alamos BETA/GAMMA SURVEY INSTRUMENT PERFORMANCE TEST LOG

NATIONAL LABORATORY
EST 1943

Instrument Manufacture: Eberline Model: ESP-1 HSE# (P/N): 2074850 Cal. Due Date: 01/08/20 Location: TA-53, MPF-3R, Rm. 141

Reference Source

ID: K-323
Isotope: Sr⁹⁰
Activity: 40.83 µCi
Bkg: 15 dpm
(200-300 cps)

Filter Position or Range: Open Scale
Reference Reading: 1710 dpm
Net Reading: 1115 dpm
Acceptance Range (± 20%): 892 dpm / 1338 dpm

Check Source

ID #: D38-00 10223 2536
Isotope: D-38
Activity: 2.6 µCi
Reference: 9020 dpm
± 20%: 7216 to 10824 dpm

Date Reference Readings Established 03 APR 19 LAUREL J SHARKEY RCT Name LAUREL J SHARKEY Signature LAUREL J SHARKEY Z Number 331582

Date/Time	Background	Net Reference Reading Scale 1	Net Reference Reading Scale 2	Net Reference Reading Scale 3	Net Reference Reading Scale 4	Check Source Reading	Pass/Fail	Printed Name/Signature	Comments
02 MAY 19 / 1300	211	1149	N/A	N/A	N/A	9000	PASS	LAUREL SHARKEY <i>[Signature]</i>	METAL CLEARANCE / MONTHLY CHECK
06 MAY 19 / 0919	195	1085	N/A	N/A	N/A	8902	PASS	L. SHARKEY <i>[Signature]</i>	METAL CLEARANCE
08 MAY 19 / 0820	213	1237	N/A	N/A	N/A	8757	PASS	L. SHARKEY <i>[Signature]</i>	METAL CLEARANCE
11 MAY 19 / 0800	157	1043	N/A	N/A	N/A	8362	PASS	L. SHARKEY <i>[Signature]</i>	METAL CLEARANCE
15 MAY 19 / 0800	197	1168	N/A	N/A	N/A	8663	PASS	L. SHARKEY <i>[Signature]</i>	METAL CLEARANCE
16 MAY 19 / 0800	170	1160	N/A	N/A	N/A	8440	PASS	L. SHARKEY <i>[Signature]</i>	METAL CLEARANCE
								/	
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COPY



RadEye SX / L44-3 Performance Test Log

TA: <u>S3</u>	Bldg: <u>312</u>	Rm: <u>2141</u>	Instrument PN: <u>15029</u>	Cal Due Date: <u>8/9/19</u>
Model: <u>RadEye SX / Ludlum 44-3</u>				Count time: 60 seconds

COPY

Reference Readings

Check Sources	Isotope	II#	Activity (dpm)	60 Second Bkg (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Expected -20% (cpm x 0.8)	Expected +20% (cpm x 1.2)
	<u>Sr90</u>	<u>F323</u>	<u>40.23 uCi</u>	<u>256</u>	<u>12100</u>	<u>11844</u>	<u>9475</u>	<u>14213</u>

Date Reference Readings Established: 11/14/18 RCT name: D. Gorin Signature: [Signature] Z-number: 324206

Performance Test Results

Date/Time	Background (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Pass / Fail	RCTZ Number	RCT Name	RCT Signature	Comments
11-14-18 0800	260	11800	11540	PASS	324206	D. Gorin	[Signature]	
2-12-19 1030	318	11912	11582	PASS	331239	B. Adams	[Signature]	
4-11-19 0900	310	11900	11590	PASS	324206	D. Gorin	[Signature]	
4-2-19 / 0720	314	11800	11486	PASS	315139	M. Muscarella	[Signature]	
4-3-19 / 0805	291	11700	11409	PASS	315139	M. Muscarella	[Signature]	
4-4-19 / 0735	312	11700	11388	PASS	315139	M. Muscarella	[Signature]	
4-16-19 / 0735	308	11600	11292	PASS	315139	M. Muscarella	[Signature]	
4-25-19 0800	271	11800	11525	Det	324206	J.V.	[Signature]	S.o.i
5-13-19 01230	258	11900	11642	PASS	331582	L. SHARSKY	[Signature]	
5-14-19 0800	277	11900	11623	PASS	331582	L. SHARSKY	[Signature]	METAL CLEARANCE
5-15-19 0800	291	12100	11809	PASS	331582	L. SHARSKY	[Signature]	METAL CLEARANCE



LANSCCE Metals Clearance Log

Date/Time: 05.15.2019 1100	Item Barcode Numbers 29229541
Photo File Name:	

Item Description, including any process and historical knowledge




Echo Package (365 Lot):
E1 – 1445 lbs shield block
E2 – 1415 lbs shield block
E3 – 1033 lbs shield block
E5 – 2935 lbs shield block
E6 – 925 lbs shield block

Evaluation

Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y

Comments

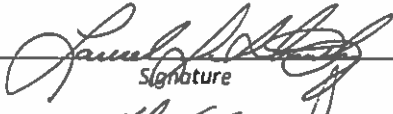

All items surveyed are shield blocks of varies weights and sizes.
All items were not in the direct path of the beam.
The E4 shield block did not satisfy survey requirements (above Decision Level).

L. Sharisky RCT Name	 Signature	336582 Z-Number	2 MAY 19 Date
K. Neal RCT Name	 Signature	331301 Z-Number	5.21.19 Date
M. Duran HPFC Reviewer	 Signature	106440 Z-Number	9/11/19 Date

LANSCe Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 05.15.19	Time: 1100	No. samples: 18
TA: 53	Building: 365	Room: Parking Lot

L. Sharisky		336582
RCT Name	Signature	Z Number
K. Neal		331301
RCT Name	Signature	Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7488	7488	01.08.20	199	30%	129.76

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15028	15028	08.09.19	62.8	100

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	67
2	64
3	63
4	62
5	58
Average	62.8

RP Tracking Number



29229541

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
1	E1 – Top Side	195	Y [1]	70	Y
2	E1 – Bottom Side	167	Y [2]	60	Y
3	E2 – Top Side	232	Y [3-4]	71	Y
4	E2 – Bottom Side	161	Y [5-6]	89	Y
5	E3 – Top Side	230	Y [7-8]	86	Y
6	E3 – Bottom Side	189	Y [9-10]	89	Y
7	E5 – Top Side	230	Y [11-12]	63	Y
8	E5 – Bottom Side	164	Y [13-14]	82	Y
9	E6 – Top Side	223	Y [15-16]	69	Y
10	E6 – Bottom Side	194	Y [17-18]	64	Y
N/A	END OF SURVEY	N/A	N/A	N/A	N/A

LANSCCE Metals Clearance Log

[illegible]

Sample Report

Batch ID:	TA-53 Samples - 201905171420	Count Date:	5/17/2019 2:20:33PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7230	Operating Volts:	1335
BC#:	29229541	Gamma Volts:	828
Bldg:	29229541	Selected Geometry	5/16" Stainless Steel

RP Tracking Number



Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 236.39$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190517142033-E1	0.00	0.00	8.70	-4.05	1.35	16.97	-25.00
20190517142334-E2	0.00	0.00	8.70	-4.05	1.35	16.97	-184.09
20190517142444-E3	0.00	0.00	8.70	0.45	3.46	16.97	190.91
20190517142554-E4	0.00	0.00	8.70	4.95	4.70	16.97	202.27
20190517142714-E5	3.21	3.21	8.70	9.45	5.67	16.97	145.45
20190517142824-E6	0.00	0.00	8.70	0.45	3.46	16.97	134.09
20190517142934-E7	0.00	0.00	8.70	-1.80	2.62	16.97	-13.64
20190517143044-E8	3.21	3.21	8.70	11.70	6.10	16.97	-81.82
20190517143204-E9	0.00	0.00	8.70	4.95	4.70	16.97	100.00
20190517143314-E10	0.00	0.00	8.70	-4.05	1.35	16.97	-25.00
20190517143424-E11	0.00	0.00	8.70	-4.05	1.35	16.97	-59.09
20190517143534-E12	0.00	0.00	8.70	2.70	4.12	16.97	9.09
20190517143645-E13	0.00	0.00	8.70	-4.05	1.35	16.97	213.64
20190517143805-E14	0.00	0.00	8.70	0.45	3.46	16.97	-36.36
20190517143915-E15	0.00	0.00	8.70	-1.80	2.62	16.97	88.64
20190517144025-E16	0.00	0.00	8.70	2.70	4.12	16.97	43.18
20190517144135-E17	0.00	0.00	8.70	-4.05	1.35	16.97	156.82
20190517144255-E18	0.00	0.00	8.70	-4.05	1.35	16.97	100.00

Batch ID:	TA-53 Samples - 201905171420	Count Date:	5/17/2019 2:20:33PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7230	Operating Volts:	1335
BC#:	29229541	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

Background (cpm)		Efficiency (%)	
Alpha Rate:	0.00 ± 0.00	Alpha:	31.11 ± 0.11
Beta Rate:	1.80 ± 0.60	Beta:	44.44 ± 0.11
Gamma Rate:	155.20 ± 5.57	Gamma:	8.80

<u>Sample ID</u>	<u>Alpha</u> <u>(dpm)</u>	<u>Unc</u>	<u>Alpha MDA</u> <u>(dpm)</u>	<u>Beta</u> <u>(dpm)</u>	<u>Unc</u>	<u>Beta MDA</u> <u>(dpm)</u>	<u>Gamma</u> <u>(dpm)</u>
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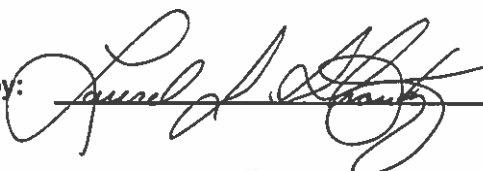
All Smears < MDALimits

RP Tracking Number



29229541

Reviewed by:

 SHARISKY

Page 2 of 2

C:\Users\Canberra\AppData\Local\Temp\LANL sample report (FAF13882-AB3E

Print Date 5/17/2019
Print Time 2:44:10PM



BETA/GAMMA SURVEY INSTRUMENT PERFORMANCE TEST LOG

HSE# (P/N): 007488

Check Source

03 APR 19
Date Reference Readings Established

LAUREL J SHARISKY
RCT Name

Laurel J Sharisky
Signature

3316507
Z Number

[illegible]

RadEye SX/L44-3 Performance Test Log

TA: <u>S3</u>	Bldg: <u>312</u>	Rm: <u>214</u>	Instrument PN: <u>15029</u>	Cal Due Date: <u>8/9/19</u>
Model: <u>RadEye SX / Ludlum 44-3</u>				Count time: 60 seconds

COPY

Reference Readings

Check Sources	Isotope	ID#	Activity (dpm)	60 Second Bkg (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Expected -20% (cpm x 0.8)	Expected +20% (cpm x 1.2)
	<u>Sr 90</u>	<u>K323</u>	<u>40.23 uCi</u>	<u>256</u>	<u>12,100</u>	<u>11844</u>	<u>9,475</u>	<u>14213</u>

Date Reference Readings Established: 11/14/18 RCT name: D. Grier Signature: [Signature] Z-number: 324201

Performance Test Results

Date/Time	Background (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Pass/Fail	RCTZ Number	RCT Name	RCT Signature	Comments
1-16-19 @ 0800	260	11,800	11,540	PASS	324200	D. Grier	[Signature]	
2-12-19 @ 1030	318	11,912	11,582	PASS	331239	B. Adams	[Signature]	
4-11-19 @ 1300	310	11,900	11,590	PASS	324200	D. Grier	[Signature]	
4-2-19 @ 0720	314	11,800	11,486	PASS	315139	M. Muscarella	[Signature]	
4-3-19 @ 0805	291	11,700	11,409	PASS	315139	M. Muscarella	[Signature]	
4-4-19 @ 0735	312	11,700	11,388	PASS	315139	M. Muscarella	[Signature]	
4-16-19 @ 0735	308	11,600	11,272	PASS	315139	M. Muscarella	[Signature]	
4-25-19 @ 0800	271	11,800	11,532	PASS	3122	J. Li	[Signature]	So. 1
5-13-19 @ 1230	258	11,900	11,642	PASS	331582	L. SHARISKY	[Signature]	
5-14-19 @ 0800	277	11,900	11,623	PASS	331582	L. SHARISKY	[Signature]	METAL CLEARANCE
5-15-19 @ 0800	291	12,100	11,809	PASS	331582	L. SHARISKY	[Signature]	METAL CLEARANCE



LANSCCE Metals Clearance Log

Date/Time: 05.16.2019 0900	Item Barcode Numbers 29229542
Photo File Name:	

Item Description, including any process and historical knowledge

Foxtrot Package (365 Lot):

F1 – 1263 lbs shield block

F3 – 1500 lbs shield block

F4 – 146 lbs shield block

F5 – 344 lbs shield block

F6 – 1030 lbs shield block

Evaluation


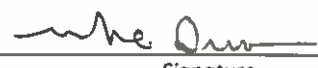
Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y

Comments

All items surveyed are shield blocks of varies weights and sizes.

All items were not in the direct path of the beam.

F2 removed from package due to activation – Smears 3-6 are no longer applicable to package as they were taken from F2

L. Sharisky RCT Name	 Signature	336582 Z-Number	22 MAY 19 Date
K. Neal RCT Name	 Signature	331301 Z-Number	5.22.19 Date
M. Duran HPFC Reviewer	 Signature	106440 Z-Number	9/11/19 Date

LANSCCE Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 05.16.2019	Time: 0900	No. samples: 14
TA: 53	Building: 365	Room: Parking Lot

L. Sharisky		336582
RCT Name	Signature	Z Number
K. Neal		331301
RCT Name	Signature	Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7488	7488	01.08.20	195	30%	128.55

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15028	15028	08.09.19	97	141

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	113
2	95
3	87
4	103
5	85
Average	97

RP Tracking Number



29229542

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
1	F1 – Top Side	235	Y [1]	70	Y
2	F1 – Bottom Side	200	Y [2]	68	Y
3	ITEM REMOVED	N/A	N/A	N/A	N/A
4	ITEM REMOVED	N/A	N/A	N/A	N/A
5	F3 – Top Side	237	Y [7]	76	Y
6	F3 – Bottom Side	109	Y [8]	77	Y
7	F4 – Top Side	215	Y [9]	84	Y
8	F4 – Bottom Side	213	Y [10]	80	Y
9	F5 – Top Side	234	Y [11]	80	Y
10	F5 – Bottom Side	195	Y [12]	85	Y
11	F6 – Top Side	223	Y [13]	62	Y

LANSCCE Metals Clearance Log

[illegible]

Sample Report

Batch ID:	TA-53 Samples - 201905171452	Count Date:	5/17/2019 2:52:26PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7231	Operating Volts:	1335
BC#:	29229542	Gamma Volts:	828
Bldg:	29229542	Selected Geometry	5/16" Stainless Steel

RP Tracking Number



Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma_{MDA} = 236.39$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190517145226-E1	0.00	0.00	8.70	2.70	4.12	16.97	497.73
20190517145357-E2	0.00	0.00	8.70	0.45	3.46	16.97	134.09
20190517145507-E3	0.00	0.00	8.70	-1.80	2.62	16.97	-263.64
→ SMEAR NOT APPLICABLE							
20190517145617-E4	0.00	0.00	8.70	-4.05	1.35	16.97	145.45
→ SMEAR NOT APPLICABLE							
20190517145737-E5	0.00	0.00	8.70	16.20	6.88	16.97	111.36
→ SMEAR NOT APPLICABLE							
20190517145847-E6	0.00	0.00	8.70	-1.80	2.62	16.97	88.64
→ SMEAR NOT APPLICABLE							
20190517145957-E7	0.00	0.00	8.70	2.70	4.12	16.97	100.00
20190517150107-E8	3.21	3.21	8.70	-1.80	2.62	16.97	31.82
20190517150217-E9	0.00	0.00	8.70	2.70	4.12	16.97	202.27
20190517150337-E10	0.00	0.00	8.70	9.45	5.67	16.97	213.64
20190517150447-E11	3.21	3.21	8.70	-4.05	1.35	16.97	247.73
20190517150557-E12	3.21	3.21	8.70	-1.80	2.62	16.97	-115.91
20190517150707-E13	3.21	3.21	8.70	2.70	4.12	16.97	259.09
20190517150827-E14	0.00	0.00	8.70	-4.05	1.35	16.97	384.09

* Smear # 1, 11, 13, 14 recounted. Recount results listed on subsequent pages.

All Smears < MDA Limits

Reviewed by:

Sample Report

Batch ID: TA-53 Samples - 201905171511

Group: E

Device: S5XLBG Unit2

Batch Key: 7232

BC#:

Bldg:

Count Date: 5/17/2019 3:11:27PM

Count Minutes: 1.00

Count Mode: Simultaneous

Operating Volts: 1335

Gamma Volts: 828

Selected Geometry 5/16" Stainless Steel

Background (cpm)

Alpha Rate: 0.00 \pm 0.00
Beta Rate: 1.80 \pm 0.60
Gamma Rate: 155.20 \pm 5.57

Efficiency (%)

Alpha: 31.11 \pm 0.11
Beta: 44.44 \pm 0.11
Gamma: 8.80

γ MDA = 236.39

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190517151127-E1	0.00	0.00	8.70	-4.05	1.35	16.97	-172.73
20190517151257-E11	0.00	0.00	8.70	4.95	4.70	16.97	270.45
20190517151407-E13	0.00	0.00	8.70	4.95	4.70	16.97	-138.64
20190517151517-E14	0.00	0.00	8.70	4.95	4.70	16.97	9.09

Smear #11 recounted, results listed on subsequent page.

All Smears < MDA Limits

RP Tracking Number



29229542

Reviewed by:

Sample Report

Batch ID: TA-53 Samples - 201905171517

Group: E

Device: S5XLBG Unit2

Batch Key: 7234

BC#:

Bldg:

Count Date: 5/17/2019 3:17:38PM

Count Minutes: 1.00

Count Mode: Simultaneous

Operating Volts: 1335

Gamma Volts: 828

Selected Geometry 5/16" Stainless Steel

Background (cpm)

Alpha Rate: 0.00 \pm 0.00
Beta Rate: 1.80 \pm 0.60
Gamma Rate: 155.20 \pm 5.57

Efficiency (%)

Alpha: 31.11 \pm 0.11
Beta: 44.44 \pm 0.11
Gamma: 8.80

γ MDA = 236.39

<u>Sample ID</u>	<u>Alpha</u> <u>(dpm)</u>	<u>Unc</u>	<u>Alpha MDA</u> <u>(dpm)</u>	<u>Beta</u> <u>(dpm)</u>	<u>Unc</u>	<u>Beta MDA</u> <u>(dpm)</u>	<u>Gamma</u> <u>(dpm)</u>
20190517151738-E11	0.00	0.00	8.70	-4.05	1.35	16.97	-36.36

RP Tracking Number



29229542

All Smears < MDALimits

Reviewed by:



Live Time 191.1 sec Dead Time 0.26 % Neutron Counts NA

Channel NA Energy NA Count NA

Load Primary Spectrum

2019_07_01_15_22_480_29229542
ReCount.CHM

Date: 26-Jun-2019 Time: 12:36:23 PM

Primary Spectrum #

1 of 1

☐ Use current calibration
when loading new data

Calibration Check

Calibration Lines

Background

Stored Calibration Parameters

Using File Calibration or Default

Zero Offset

0.225 keV/Channel

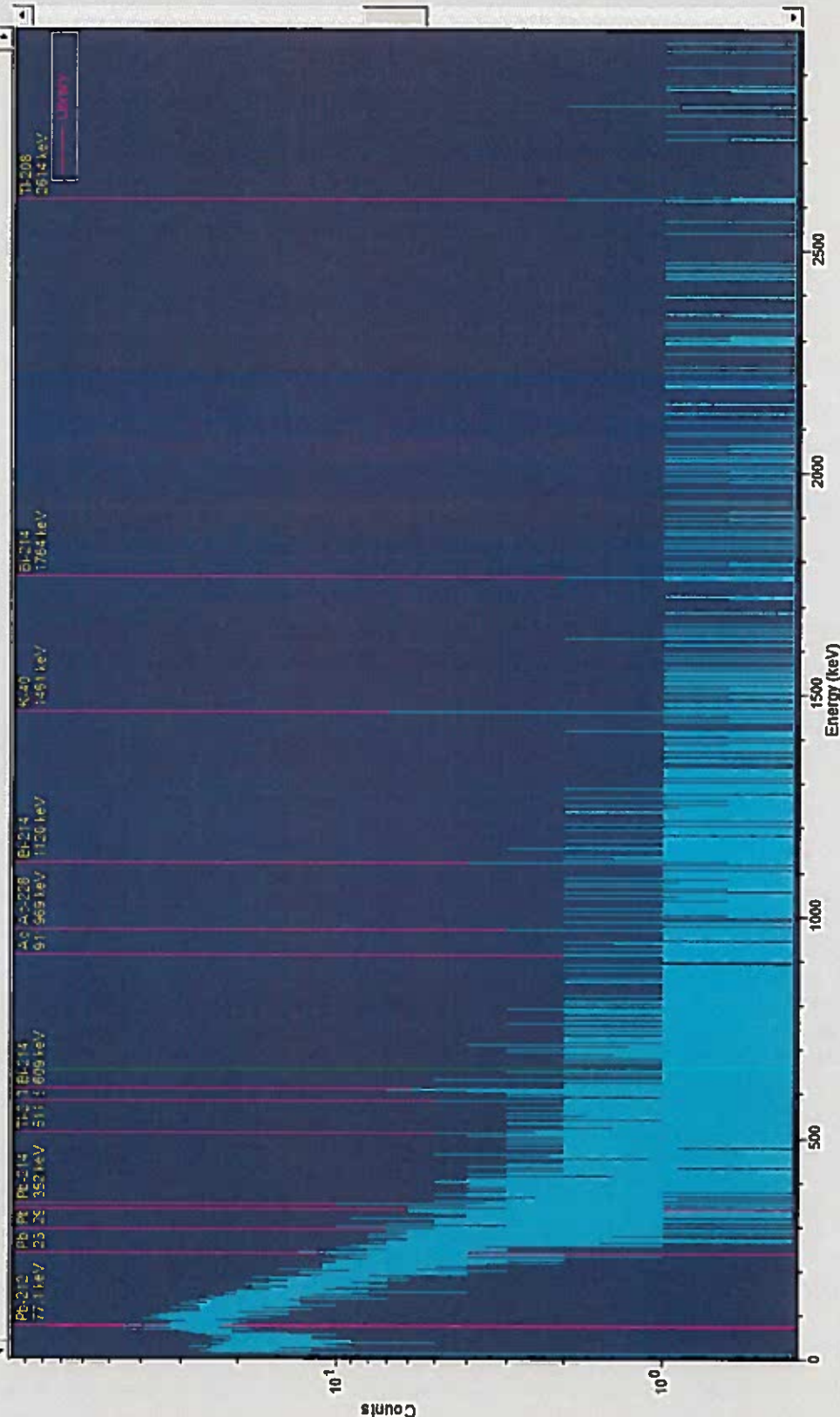
0.3659

Load Second/Back Spectrum

PeakEasyLib

Any File

File Drag & Drop Permitted



Zero Offset

Gain Adjust

Radioactive Nuclide: [Background] Parents and Decay Chains: [Th-232, U-238, K-40]

Half-Life: [NA] Curies / Gram: [NA] Density (g/cc): [NA]

Assumed Age: [NA] ☒ Include All Daughters

G Dose Rate / Ci @ 1m: [NA] ☒ Include X-Rays

PeakEasy

Nuclide Library

Nuclide Search

Advanced Calibration

Energy (keV)	Photo/Decay	Nuclide	Decay Mode
295.22	1.930e-001	Pb-214	Beta-
77.11	1.750e-001	Pb-212	Beta-
958.97	1.580e-001	Ac-228	Beta-
1754.49	1.540e-001	Bi-214	Beta-
1120.29	1.510e-001	Bi-214	Beta-
338.32	1.127e-001	Ac-236	Beta-
1460.83	1.067e-001	K-40	NA
74.81	1.040e-001	Pb-212	Beta-
510.77	8.124e-002	Tl-208	Beta-
77.11	7.998e-002	Pb-214	Beta-

Save Library

Clear Last

Clear Lines

BETA/GAMMA SURVEY INSTRUMENT PERFORMANCE TEST LOG

Instrument Manufacturer: Eberline Model: ESP-1 HSE# (P/N): 001485 Cal. Due Date: 01/08/20 Location: TA-53, MPF-3R, Rm. 141

Reference Source
ID: K-323 Filter Position or Range: Open Scale dpm
Isotope: Sr⁹⁰ Reference Reading: 1730 dpm
Activity: 40.83 μCi Net Reading: 1115 dpm
Bkg: 145 dpm Acceptance Range (± 20%): 892 dpm / 1338 dpm
(200 - 300 μCi)

Check Source

ID #: D38-00 Isotope: D-38
Activity: 2.6 μCi
Reference: 9020 dpm
± 20%: 7216 to 10824 dpm

Date Reference Readings Established 03 APR 19 LAUREL J. SHARKEY RCT Name Signature 3315892 Z Number

Date/Time	Background	Net Reference Reading Scale 1	Net Reference Reading Scale 2	Net Reference Reading Scale 3	Net Reference Reading Scale 4	Check Source Reading	Pass/Fail	Printed Name/Signature	Comments
02 MAY 19 / 1300	211	1149	N/A	N/A	N/A	9000	PASS	LAUREL SHARKEY	METAL CLEARANCE / MONTHLY CHECK
06 MAY 19 / 0919	195	1085	N/A	N/A	N/A	8902	PASS	L. SHARKEY	METAL CLEARANCE
08 MAY 19 / 0820	213	1237	N/A	N/A	N/A	8757	PASS	L. SHARKEY	METAL CLEARANCE
14 MAY 19 / 0800	157	1043	N/A	N/A	N/A	8362	PASS	L. SHARKEY	METAL CLEARANCE
15 MAY 19 / 0600	197	1158	N/A	N/A	N/A	8663	PASS	L. SHARKEY	METAL CLEARANCE
16 MAY 19 / 0800	170	1160	N/A	N/A	N/A	8440	PASS	L. SHARKEY	METAL CLEARANCE
								/	
								/	
								/	
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								/	
								/	

COPY

RadEye SX / L44-3 Performance Test Log

TA: <u>S3</u>	Bldg: <u>3R</u>	Rm: <u>214</u>	Instrument PN: <u>15029</u>	Cal Due Date: <u>8/9/19</u>
Model: RadEye SX / Ludlum 44-3				Count time: 60 seconds

Reference Readings

COPY

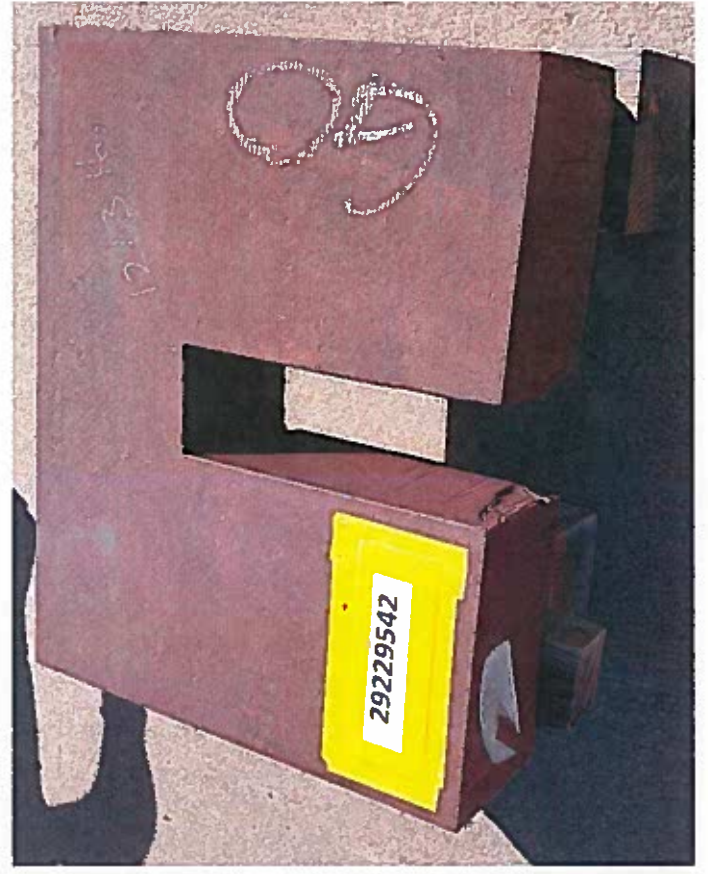
Check Sources	Isotope	II#	Activity (dpm)	60 Second Bkg (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Expected -20% (cpm x 0.8)	Expected +20% (cpm x 1.2)
	<u>Sr90</u>	<u>K323</u>	<u>40.23 uCi</u>	<u>256</u>	<u>12.100</u>	<u>11844</u>	<u>9.475</u>	<u>14213</u>

Date Reference Readings Established: 11/14/18 RCT name: D. Gerin Signature: [Signature] Z-number: 324206

Performance Test Results

Background / Sample Count Time: 60 seconds

Date/Time	Background (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Pass/Fail	RCTZ Number	RCT Name	RCT Signature	Comments
1-16-19 @ 0900	260	11800	11540	PASS	324206	D. Gerin	[Signature]	
2-12-19 @ 1030	318	11916	11582	PASS	331239	B. Adams	[Signature]	
4-11-19 @ 1300	310	11900	11590	PASS	324206	D. Gerin	[Signature]	
4-2-19 @ 0720	314	11800	11486	PASS	315139	M. Muscarella	[Signature]	
4-3-19 @ 0805	291	11700	11409	PASS	315139	M. Muscarella	[Signature]	
4-4-19 @ 0735	312	11700	11388	PASS	315139	M. Muscarella	[Signature]	
4-16-19 @ 0755	308	11600	11292	PASS	315139	M. Muscarella	[Signature]	
4-24-19 @ 0800	271	11800	11535	Pass	324206	J. V.	[Signature]	So.1
5-13-19 @ 1230	288	11900	11642	PASS	331582	L. SHARSKY	[Signature]	
5-14-19 @ 0800	277	11900	11623	PASS	331582	L. SHARSKY	[Signature]	METAL CLEARANCE
5-15-19 @ 0800	291	12100	11809	PASS	331582	L. SHARSKY	[Signature]	METAL CLEARANCE



LANSCCE Metals Clearance Log

Date/Time: 05.16.19 1000	Item Barcode Numbers 29229543
Photo File Name:	

Item Description, including any process and historical knowledge

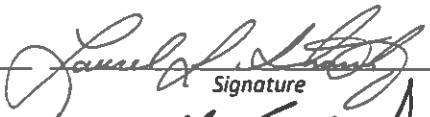
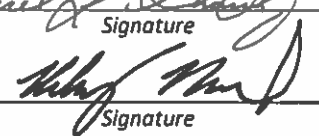

Golf Package (365 Lot):
G1 – 1185 lbs shield block
G2 – 1130 lbs shield block
G3 – 1263 lbs shield block
G4 – 1215 lbs shield block
G5 – 2975 lbs shield block

Evaluation

Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y



Comments

All items surveyed are shield blocks of varies weights and sizes.
All items were not in the direct path of the beam.

L. Sharisky RCT Name	 Signature	336582 Z-Number	21 MAY 19 Date
K. Neal RCT Name	 Signature	331301 Z-Number	5.21.19 Date
M. Duran HPFC Reviewer	 Signature	106440 Z-Number	9/11/19 Date

LANSC E Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 05.16.19	Time: 1000	No. samples: 16
TA: 53	Building: 365	Room: Parking Lot
L. Sharisky RCT Name	 Signature	336582 Z Number
K. Neal RCT Name	 Signature	331301 Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7488	7488	01.08.20	197	30%	129.16

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15028	15028	08.09.19	68	107

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	68
2	56
3	70
4	76
5	71
Average	68

RP Tracking Number



29229543

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
1	G1 – Top Side	214	Y [1]	61	Y
2	G1 – Bottom Side	152	Y [2]	75	Y
3	G2 – Top Side	219	Y [3]	63	Y
4	G2 – East Side	222	-	66	Y
5	G2 – South Side	219	-	69	Y
6	G2 – West Side	234	-	65	Y
7	G2 – North Side	209	-	52	Y
8	G2 – Bottom Side	200	Y [4]	69	Y
9	G3 – Top Side	228	Y [5-6]	58	Y
10	G3 – Bottom Side	189	Y [7-8]	69	Y
11	G4 – Top Side	229	Y [9]	62	Y

LANSCCE Metals Clearance Log

[illegible]

Sample Report

Batch ID:	TA-53 Samples - 201905171520	Count Date:	5/17/2019 3:20:27PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7235	Operating Volts:	1335
BC#:	29229543	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229543

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 236.39$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190517152027-E1	6.43	4.55	8.70	-4.05	1.35	16.97	-93.18
20190517152157-E2	0.00	0.00	8.70	0.45	3.46	16.97	259.09
20190517152307-E3	0.00	0.00	8.70	2.70	4.12	16.97	-81.82
20190517152417-E4	0.00	0.00	8.70	2.70	4.12	16.97	20.45
20190517152537-E5	3.21	3.21	8.70	9.45	5.67	16.97	-2.27
20190517152647-E6	0.00	0.00	8.70	-1.80	2.62	16.97	350.00
20190517152757-E7	0.00	0.00	8.70	2.70	4.12	16.97	145.45
20190517152908-E8	3.21	3.21	8.70	0.45	3.46	16.97	20.45
20190517153028-E9	0.00	0.00	8.70	-4.05	1.35	16.97	304.55
20190517153138-E10	3.21	3.21	8.70	-4.05	1.35	16.97	168.18
20190517153248-E11	3.21	3.21	8.70	-4.05	1.35	16.97	-13.64
20190517153358-E12	0.00	0.00	8.70	0.45	3.46	16.97	9.09
20190517153508-E13	0.00	0.00	8.70	0.45	3.46	16.97	179.55
20190517153628-E14	0.00	0.00	8.70	-1.80	2.62	16.97	-229.55
20190517153738-E15	0.00	0.00	8.70	2.70	4.12	16.97	-2.27
20190517153848-E16	0.00	0.00	8.70	2.70	4.12	16.97	134.09

* SMEARS #2, 6, 9 recounted. Results on following page.

Reviewed by:

All Smears < MDALimit

Sample Report

Batch ID:	TA-53 Samples - 201905171542	Count Date:	5/17/2019 3:42:15PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7236	Operating Volts:	1335
BC#:		Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229543

Background (cpm)

Alpha Rate: 0.00 ± 0.00
 Beta Rate: 1.80 ± 0.60
 Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
 Beta: 44.44 ± 0.11
 Gamma: 8.80

MDA = 236.39

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190517154215-E2	0.00	0.00	8.70	4.95	4.70	16.97	236.36
20190517154346-E6	0.00	0.00	8.70	-1.80	2.62	16.97	9.09
20190517154456-E9	0.00	0.00	8.70	0.45	3.46	16.97	-59.09

* Smear #2 recounted. Results on the following page.

All Smears < MDALimits

Reviewed by:

Sample Report

Batch ID:	TA-53 Samples - 201905171547	Count Date:	5/17/2019 3:47:52PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7238	Operating Volts:	1335
BC#:		Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229543

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

f_{MDA} = 236.39

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190517154752-E2	0.00	0.00	8.70	4.95	4.70	16.97	-138.64

All Smears < MDA Limits

Reviewed by: 



Live Time 121.0 sec Dead Time 0.28 % Neutron Counts NA

Load Primary Spectrum

2019_07_01_11_55_530 I
2922943.CHN

Date: 26-Jun-2019

Time: 12:36:05 PM

Primary Spectrum #

< 1 of 1 >

☐ Use current calibration
when loading new data

Calibration Check

Calibration Lines

Background Show

Stored Calibration Parameters

Using File Calibration or Default

Zero Offset

0.225 keV/Channel

Load Second/Back Spectrum

PeakEasyLib

Any File

File Drag & Drop Permitted

Counts

Energy (keV)

Gain Adjust

Zero Offset

PeakEasy

Nuclide Library

Nuclide Search

Advanced Calibration

Radioactive Nuclide

Background

Parents and Decay Chains

Th-232, U-238, K-40

Half-Life

NA

Curies / Bq/cm

NA

Density (g/cc)

NA

Assumed Age

NA

Include All Daughters

☒

G Dose Rate / Ci @ 1m

NA

Include X-Rays

☒

Energy (keV)	Photo/Decay	Nuclide	Decay Mode
295.22	1.90e-001	Pb-214	Beta-
277.11	1.750e-001	Pb-212	Beta-
968.57	1.980e-001	Ac-228	Beta-
1764.49	1.540e-001	Bi-214	Beta-
1120.29	1.510e-001	Bi-214	Beta-
338.32	1.127e-001	Ac-228	Beta-
1460.83	1.057e-001	Pb-214	Beta-
74.81	1.040e-001	Pb-212	Beta-
510.77	8.134e-002	Tl-208	Beta-
77.11	7.999e-002	Ph-214	Beta-

Save Library

Clear List

Clear Lines

BETA/GAMMA SURVEY INSTRUMENT PERFORMANCE TEST LOG

EST 1943

Instrument Manufacture: Eberline Model: ESP-1 HSE# (P/N): 007486 Cal. Due Date: 01/08/20 Location: TA-53, MPF-3R, Rm. 141

Reference Source		Check Source	
ID: <u>K-323</u>	ID #: <u>D38-00</u>	<u>147.2</u>	<u>253.6</u>
Isotope: <u>Sr⁹⁰</u>	Isotope: <u>D-38</u>		
Activity: <u>40.83 μci</u>	Activity: <u>2.6 μci</u>		
Bkg: <u>15 dpm</u>	Reference: <u>9.02 dpm</u>		
(200 - 300) \pm 11	\pm 20%: <u>7.21 to 10.82 dpm</u>		
Filter Position or Range:			
Reference Reading: <u>1310 dpm</u>			
Net Reading: <u>1115 dpm</u>			
Acceptance Range (\pm 20%): <u>892 dpm / 1338 dpm</u>			

03 APR 19
Date Reference Readings Established

LAUREL J SHARSKY	Signature	Z Number
	3316581	

[illegible]



RadEye SX/L44-3 Performance Test Log

TA: <u>S3</u>	Bldg: <u>312</u>	Rm: <u>1214</u>	Instrument PN: <u>15029</u>	Cal Due Date: <u>8/9/19</u>	Count time: 60 seconds
Model: RadEye SX /Ludlum 44-3					

Reference Readings

COPY

Check Sources	Isotope	IID#	Activity (dpm)	60 Second Bkg (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Expected -20% (cpm x 0.8)	Expected +20% (cpm x 1.2)
	<u>Sr 90</u>	<u>K323</u>	<u>40.2366</u>	<u>256</u>	<u>12,100</u>	<u>11844</u>	<u>9,475</u>	<u>14213</u>

Date Reference Readings Established: 11/14/18 RCT name: D. Gorin Signature: [Signature] Z-number: 324201

Performance Test Results

Date/Time	Background (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Pass/ Fail	RCTZ Number	RCT Name	RCT Signature	Comments
11-19-0800	260	11800	11540	PASS	324201	D. Gorin	[Signature]	
2-12-19 1030	318	11912	11582	PASS	331239	B. Adams	[Signature]	
9/11/19 01300	310	11900	11590	PASS	324201	D. Gorin	[Signature]	
4-2-19/0720	314	11800	11486	PASS	315139	M. Muscarella	[Signature]	
4-3-19/0805	291	11700	11409	PASS	315139	M. Muscarella	[Signature]	
4-4-19/0735	312	11700	11388	PASS	315139	M. Muscarella	[Signature]	
4-16-19/0735	308	11600	11292	PASS	315139	M. Muscarella	[Signature]	
4/25/19 @ 0800	271	11892	11521	Pass	3122	J.V.	[Signature]	So.1
5/13/19 @ 1230	258	11900	11642	PASS	331582	L. SHARKEY	[Signature]	
5.14.19 @ 0800	277	11900	11623	PASS	331582	L. SHARKEY	[Signature]	METAL CLEARANCE
5.15.19 @ 0800	291	12100	11809	PASS	331582	L. SHARKEY	[Signature]	METAL CLEARANCE



LANSCCE Metals Clearance Log

Date/Time: 05.22.19 0945	Item Barcode Numbers 29229544
Photo File Name:	

Item Description, including any process and historical knowledge


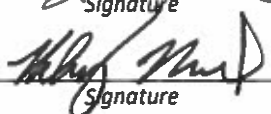
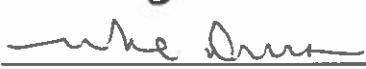
Gray block with protrusion underneath;
Approximately 15 inches x 51 inches

Evaluation

Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y

Comments

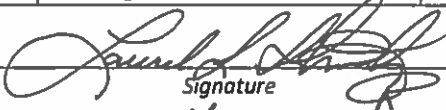

Item was not in the direct path of the beam.

L. Sharisky RCT Name	 Signature	336582 Z-Number	22 MAY 19 Date
K. Neal RCT Name	 Signature	331301 Z-Number	5.22.19 Date
M. Duran HPFC Reviewer	 Signature	106440 Z-Number	9/11/19 Date

LANSCCE Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 05.22.2019	Time: 0945	No. samples: 10
TA: 53	Building: 365	Room: Parking Lot

L. Sharisky		336582
RCT Name	Signature	Z Number
K. Neal		331301
RCT Name	Signature	Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7448	7448	01.08.20	176	30%	122.63

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15028	15028	08.09.2019	70.4	115

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	70
2	73
3	61
4	83
5	65
Average	70.4

RP Tracking Number



29229544

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
1	Gray Block – Top Side	242	Y [1-2]	68	Y
2	Gray Block – South Side	215	Y [3]	75	Y
3	Gray Block – West Side	170	Y [4]	59	Y
4	Gray Block – North Side	184	Y [5]	84	Y
5	Gray Block – East Side	193	Y [6]	59	Y
6	Gray Block – Bottom	184	Y [7-10]	91	Y
N/A	END OF SURVEY	N/A	N/A	N/A	N/A
I	I	I	I	I	I
I	I	I	I	I	I
I	I	I	I	I	I
N/A	N/A	N/A	N/A	N/A	N/A

LANSCCE Metals Clearance Log

[illegible]

Sample Report

Batch ID:	TA-53 Samples - 201905221518	Count Date:	5/22/2019 3:18:27PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7288	Operating Volts:	1335
BC#:	29229544	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229544

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

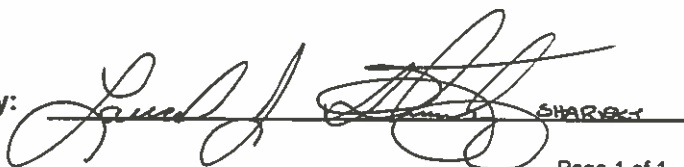
Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\sigma = 250.63$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190522151827-E1	6.43	4.55	8.70	-1.80	2.62	16.97	225.00
20190522151958-E2	3.21	3.21	8.70	-4.05	1.35	16.97	259.09
20190522152108-E3	3.21	3.21	8.70	-1.80	2.62	16.97	-93.18
20190522152218-E4	0.00	0.00	8.70	11.70	6.10	16.97	145.45
20190522152338-E5	0.00	0.00	8.70	2.70	4.12	16.97	-13.64
20190522152448-E6	0.00	0.00	8.70	-1.80	2.62	16.97	236.36
20190522152558-E7	0.00	0.00	8.70	0.45	3.46	16.97	-184.09
20190522152708-E8	0.00	0.00	8.70	4.95	4.70	16.97	54.55
20190522152829-E9	0.00	0.00	8.70	0.45	3.46	16.97	-13.64
20190522152938-E10	3.21	3.21	8.70	2.70	4.12	16.97	156.82

All Smears < MDALimits
EXCEPT SMEAR #2

Reviewed by:



Sample Report

Batch ID:	TA-53 Samples - 201905221540	Count Date:	5/22/2019 3:40:40PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7290	Operating Volts:	1335
BC#:	RP Tracking Number  29229544	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

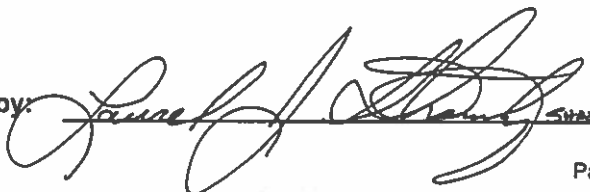
Background (cpm)		Efficiency (%)	
Alpha Rate:	0.00 ± 0.00	Alpha:	31.11 ± 0.11
Beta Rate:	1.80 ± 0.60	Beta:	44.44 ± 0.11
Gamma Rate:	155.20 ± 5.57	Gamma:	8.80

$\gamma = 250.63$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190522154040-E2	0.00	0.00	8.70	4.95	4.70	16.97	145.45

All Smears < MDALimits

Reviewed by:

 **Stankovic**

Page 1 of 1

C:\Users\Canberra\AppData\Local\Temp\LANL sample report {74CA6394-CF4C

Print Date 5/22/2019
Print Time 3:42:16PM

11:23 AM
7/1/2019



Los Alamos BETA/GAMMA SURVEY INSTRUMENT PERFORMANCE TEST LOG

NATIONAL LABORATORY

EST 1943

Instrument Manufacturer: Eberline Model: ESP-1 HSE# (P/N): 001480 Cal. Due Date: 01/08/20 Location: TA-53, MPF-3R, Rm. 141

Reference Source

ID: K-323
Isotope: Si⁹⁰
Activity: 40.831uCi
Bkg: 15.5 dpm
(200-300 101uCi)

Filter Position or Range:

Reference Reading: 1310 dpm
Open Scale
Net Reading: 1115 dpm
Acceptance Range ($\pm 20\%$): 892 dpm / 1333 dpm

Check Source

ID #: D38-00 10122 2526
Isotope: D-38
Activity: 2.61uCi
Reference: 9020 dpm
 $\pm 20\%$: 7216 to 10824 dpm

03 APR 19

Date Reference Readings Established

LAUREL J. SHARKEY

RCT Name

LAUREL J. SHARKEY

Signature

Z Number

Date/Time	Background	Net Reference Reading Scale 1	Net Reference Reading Scale 2	Net Reference Reading Scale 3	Net Reference Reading Scale 4	Check Source Reading	Pass/Fail	Printed Name/Signature	Comments
02 MAY 19 / 1300	211	1149	N/A	N/A	N/A	9000	PASS	LAUREL SHARKEY <i>[Signature]</i>	METAL CLEARANCE / MONTHLY CHECK
06 MAY 19 / 0919	195	1085	N/A	N/A	N/A	8902	PASS	L. SHARKEY <i>[Signature]</i>	METAL CLEARANCE
08 MAY 19 / 0820	213	1237	N/A	N/A	N/A	8757	PASS	L. SHARKEY <i>[Signature]</i>	METAL CLEARANCE
14 MAY 19 / 0800	157	1043	N/A	N/A	N/A	8362	PASS	L. SHARKEY <i>[Signature]</i>	METAL CLEARANCE
15 MAY 19 / 0600	197	1168	N/A	N/A	N/A	8663	PASS	L. SHARKEY <i>[Signature]</i>	METAL CLEARANCE
16 MAY 19 / 0800	170	1160	N/A	N/A	N/A	8440	PASS	L. SHARKEY <i>[Signature]</i>	METAL CLEARANCE
22 MAY 19 / 0740	200	1160	N/A	N/A	N/A	8910	PASS	L. SHARKEY <i>[Signature]</i>	METAL CLEARANCE
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Los Alamos
NATIONAL LABORATORY

EST. 1943

RadEye SX/L44-3 Performance Test Log

TA: S3	Bldg: 312	Rm: 12141	Instrument PN: 15029	Cal Due Date: 8/9/19	Count time: 60 seconds
Model: RadEye SX / Ludlum 44-3					

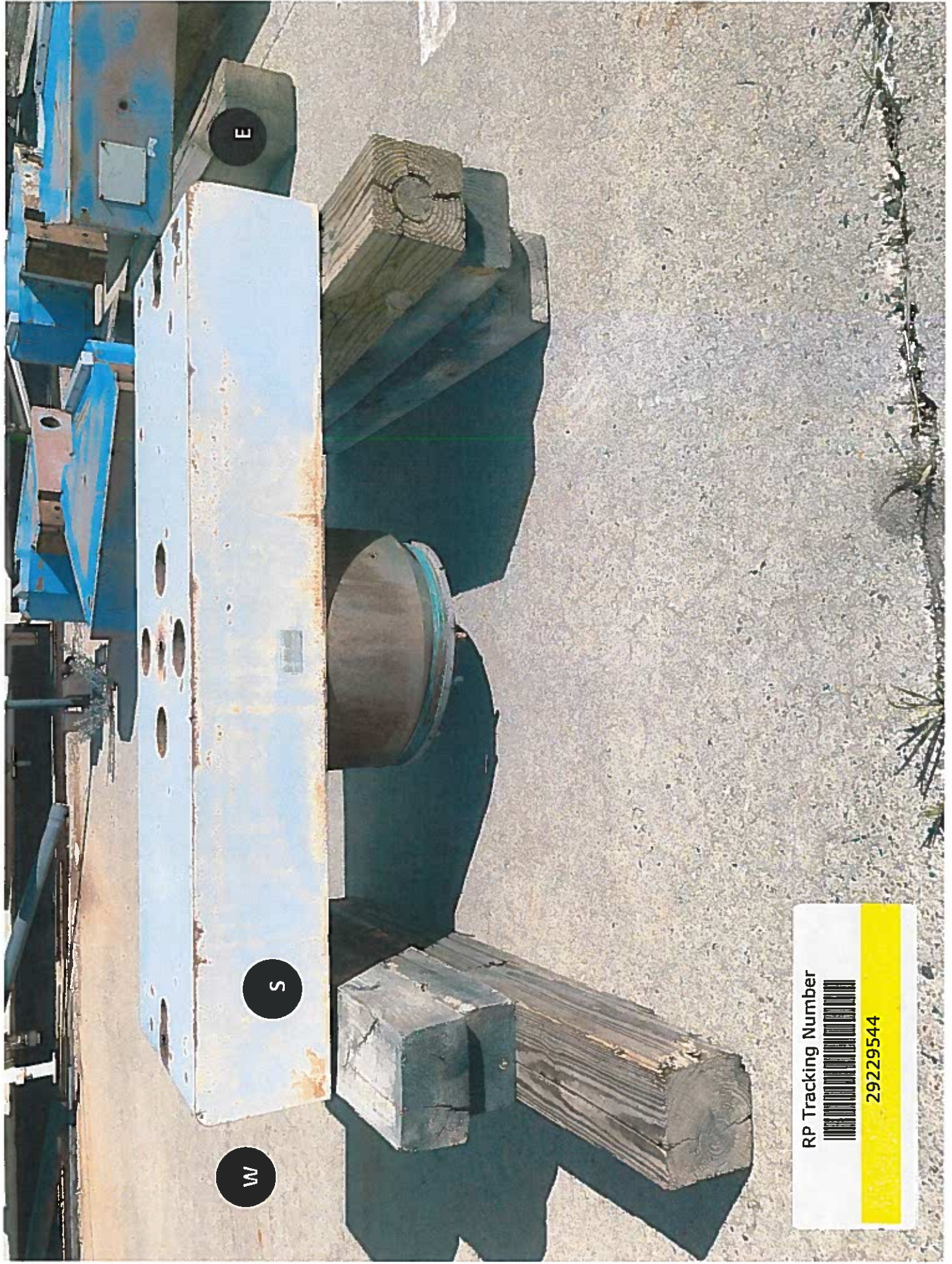
Reference Readings

Check Sources	Isotope	II #	Activity (dpm)	60 Second Bkg (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Expected -20% (cpm x 0.8)	Expected +20% (cpm x 1.2)
	Sr90	K323	40,236.6	256	12,100	11,844	9,475	14,213

Date Reference Readings Established: 11/14/18 RCT name: D. Garcia Signature: [Signature] Z-number: 324206

Performance Test Results

Date/Time	Background (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Pass/Fail	RCTZ Number	RCT Name	RCT Signature	Comments
11-19-0800	260	11,800	11,540	PASS	324206	D. Garcia	[Signature]	
2-12-19 1030	318	11,916	11,582	PASS	331239	B. Adams	[Signature]	
4-11-19 1300	310	11,900	11,590	PASS	324206	D. Garcia	[Signature]	COPY
4-2-19 0720	314	11,800	11,486	PASS	315139	M. Muscarella	[Signature]	
4-3-19 0805	291	11,700	11,409	PASS	315139	M. Muscarella	[Signature]	
4-4-19 0735	312	11,700	11,388	PASS	315139	M. Muscarella	[Signature]	
4-16-19 0735	308	11,600	11,292	PASS	315139	M. Muscarella	[Signature]	
4-24-19 0800	271	11,800	11,525	Det	7122	J. V.	[Signature]	Sa.1
5-13-19 01230	258	11,900	11,642	PASS	3316582	L. SHARISKY	[Signature]	
5-14-19 0800	277	11,900	11,623	PASS	3316582	L. SHARISKY	[Signature]	METAL CLEARANCE
5-15-19 0800	291	12,100	11,809	PASS	3316582	L. SHARISKY	[Signature]	METAL CLEARANCE
5-22-19 0740	271	11,200	10,929	PASS	3316582	L. SHARISKY	[Signature]	METAL CLEARANCE



RP Tracking Number



29229544

LANSCCE Metals Clearance Log

Date/Time: 06.10.2019 0830	Item Barcode Numbers 29219680
Photo File Name:	

Item Description, including any process and historical knowledge


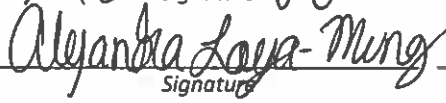
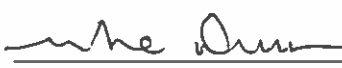
Two blue eye bolts (labelled alpha and bravo)
Ten blue eye-beams (labelled with roman numerals)

Evaluation

Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y

Comments



Objects were not in the direct beam path.

L. Sharisky RCT Name	 Signature	336582 Z-Number	09.11.19 Date
A. Loya-Munoz RCT Name	 Signature	295558 Z-Number	09-11-19 Date
M. Duran HPFC Reviewer	 Signature	106440 Z-Number	9/11/19 Date

LANSCCE Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 06.10.2019	Time: 0830	No. samples: 29
TA: 53	Building: Spoils Lot	Room: Radiation Area

L. Sharisky		336582
RCT Name	Signature	Z Number
A. Loya-Munoz		295558
RCT Name	Signature	Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7488	7488	01.08.2019	184	30%	125.16

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15028	15028	08.09.19	63.2	100

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	60
2	57
3	68
4	55
5	76
Average	63.2

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
1	Eye Bolt - Alpha	233	Y [1-4]	88	Y
2	Eye Bolt - Bravo	217	Y [5-8]	71	Y
3	Eye Beam - I Top	215	Y [9]	77	Y
4	Eye Beam - I Bottom	196	Y [10]	85	Y
5	Eye Beam - II Top	225	Y [11]	69	Y
6	Eye Beam - II Bottom	212	Y [12]	90	Y
7	Eye Beam - III Top	214	Y [13]	82	Y
8	Eye Beam - III Bottom	191	Y [14]	89	Y
9	Eye Beam - IV Top	199	Y [15]	64	Y
10	Eye Beam - IV Bottom	224	Y [16]	78	Y
11	Eye Beam - V Top	213	Y [17]	69	Y

LANSCCE Metals Clearance Log

[illegible]

Sample Report

Batch ID:	TA-53 Samples - 201906101056	Count Date:	6/10/2019 10:56:09AM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7456	Operating Volts:	1335
BC#:	29219680	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

8 MDA: 260.07 dpm

<u>Sample ID</u>	<u>Alpha (dpm)</u>	<u>Unc</u>	<u>Alpha MDA (dpm)</u>	<u>Beta (dpm)</u>	<u>Unc</u>	<u>Beta MDA (dpm)</u>	<u>Gamma (dpm)</u>
20190610105609-E1	0.00	0.00	8.70	-1.80	2.62	16.97	-184.09
20190610105909-E2	0.00	0.00	8.70	-1.80	2.62	16.97	-297.73
20190610110020-E3	0.00	0.00	8.70	-4.05	1.35	16.97	88.64
20190610110130-E4	3.21	3.21	8.70	-4.05	1.35	16.97	-93.18
20190610110250-E5	3.21	3.21	8.70	0.45	3.46	16.97	-252.27
20190610110400-E6	0.00	0.00	8.70	0.45	3.46	16.97	-161.36
20190610110510-E7	0.00	0.00	8.70	0.45	3.46	16.97	-93.18
20190610110620-E8	3.21	3.21	8.70	-4.05	1.35	16.97	-93.18
20190610110740-E9	0.00	0.00	8.70	7.20	5.21	16.97	88.64
20190610110850-E10	0.00	0.00	8.70	0.45	3.46	16.97	145.45
20190610111000-E11	0.00	0.00	8.70	-1.80	2.62	16.97	-70.45
20190610111110-E12	0.00	0.00	8.70	-1.80	2.62	16.97	122.73
20190610111220-E13	3.21	3.21	8.70	-1.80	2.62	16.97	-206.82
20190610111340-E14	0.00	0.00	8.70	-4.05	1.35	16.97	-13.64
20190610111450-E15	0.00	0.00	8.70	-1.80	2.62	16.97	-59.09
20190610111600-E16	0.00	0.00	8.70	-1.80	2.62	16.97	-70.45
20190610111710-E17	3.21	3.21	8.70	0.45	3.46	16.97	-47.73
20190610111830-E18	0.00	0.00	8.70	-1.80	2.62	16.97	-104.55

Batch ID: TA-53 Samples - 201906101056
Group: E
Device: S5XLBG Unit2
Batch Key: 7456
BC#: 29219680
Bldg:

Count Date: 6/10/2019 10:56:09AM
Count Minutes: 1.00
Count Mode: Simultaneous
Operating Volts: 1335
Gamma Volts: 828
Selected Geometry 5/16" Stainless Steel

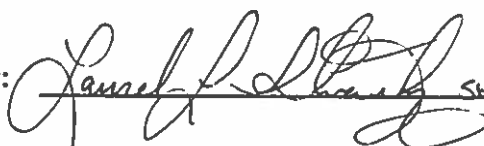
Background (cpm)			Efficiency (%)		
Alpha Rate:	0.00	± 0.00	Alpha:	31.11	± 0.11
Beta Rate:	1.80	± 0.60	Beta:	44.44	± 0.11
Gamma Rate:	155.20	± 5.57	Gamma:	8.80	

8 MDA: 260.07 dpm

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190610111941-E19	0.00	0.00	8.70	2.70	4.12	16.97	100.00
20190610112051-E20	3.21	3.21	8.70	-1.80	2.62	16.97	31.82
20190610112201-E21	0.00	0.00	8.70	0.45	3.46	16.97	225.00
20190610112321-E22	0.00	0.00	8.70	0.45	3.46	16.97	-93.18
20190610112431-E23	0.00	0.00	8.70	-1.80	2.62	16.97	-184.09
20190610112541-E24	3.21	3.21	8.70	2.70	4.12	16.97	-172.73
20190610112651-E25	0.00	0.00	8.70	0.45	3.46	16.97	9.09
20190610112801-E26	3.21	3.21	8.70	0.45	3.46	16.97	134.09
20190610112921-E27	0.00	0.00	8.70	0.45	3.46	16.97	-59.09
20190610113031-E28	0.00	0.00	8.70	-1.80	2.62	16.97	20.45
20190610113141-E29	0.00	0.00	8.70	-1.80	2.62	16.97	-59.09

Less than table 14-2 Limits
ALL SMEARS < MDA

Reviewed by:

 SHARISKY



Los Alamos
NATIONAL LABORATORY
EST. 1943

BETA/GAMMA SURVEY INSTRUMENT PERFORMANCE TEST LOG

Instrument Manufacturer: Eberline Model: ESP-1 HSE# (P/N): 007488 Cal. Due Date: 01/08/20 Location: TA-53, MPF-3R, Rm. 141

Reference Source

ID: K-323

Isotope: Si⁹⁰

Activity: 40.83 µCi

Bkg: 115 dpm
(200 - 300 c/min)

Filter Position or Range: Open Scale

Reference Reading: 1710 dpm

Net Reading: 1115 dpm

Acceptance Range ($\pm 20\%$) 892 dpm / 1337 dpm

Check Source

ID #: D38-00 WZ-2 2536

Isotope: D-38

Activity: 2.6 µCi

Reference: 9020 dpm

$\pm 20\%$: 7216 to 10824 dpm

03 APR 19

LAUREL J SHARISKY

LAUREL J SHARISKY 3316582

Date Reference Readings Established

RCT Name

Signature

Z Number

Date/Time	Background	Net Reference Reading Scale 1	Net Reference Reading Scale 2	Net Reference Reading Scale 3	Net Reference Reading Scale 4	Check Source Reading	Pass/Fail	Printed Name/Signature	Comments
02 MAY 19 / 1300	211	1149	N/A	N/A	N/A	9000	PASS	LAUREL SHARISKY <i>[Signature]</i>	METHAL CLEARANCE / MONTHLY CHECK
06 MAY 19 / 0919	195	1085	N/A	N/A	N/A	8902	PASS	L. SHARISKY <i>[Signature]</i>	METHAL CLEARANCE
08 MAY 19 / 0820	213	1237	N/A	N/A	N/A	8757	PASS	L. SHARISKY <i>[Signature]</i>	METHAL CLEARANCE
14 MAY 19 / 0800	157	1043	N/A	N/A	N/A	8362	PASS	L. SHARISKY <i>[Signature]</i>	METHAL CLEARANCE
15 MAY 19 / 0800	197	1158	N/A	N/A	N/A	8663	PASS	L. SHARISKY <i>[Signature]</i>	METHAL CLEARANCE
16 MAY 19 / 0800	170	1160	N/A	N/A	N/A	8440	PASS	L. SHARISKY <i>[Signature]</i>	METHAL CLEARANCE
22 MAY 19 / 0740	200	1160	N/A	N/A	N/A	8910	PASS	L. SHARISKY <i>[Signature]</i>	METHAL CLEARANCE
06 JUN 19 / 1200	200	1080	N/A	N/A	N/A	8570	PASS	L. SHARISKY <i>[Signature]</i>	METHAL CLEARANCE
10 JUN 19 / 0800	151	1199	N/A	N/A	N/A	8819	PASS	L. SHARISKY <i>[Signature]</i>	METHAL CLEARANCE
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TA: 55	Bldg: 32	Rm: R141	Instrument PN: 16028	Cal Due Date: 08.07.19
Model: RadEye SX /Ludlum 44-3				Count time: 60 seconds

Check Sources	Isotope	ID#	Activity (dpm)	60 Second Bkg (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Expected -20% (cpm x 0.8)	Expected +20% (cpm x 1.2)
	Sr 90	K-323	40.83	217	11200	10933 10823	8739	13157

Performance Test Results

[illegible]



LANSCCE Metals Clearance Log

Date/Time: 07.18.19 / 0830	Item Barcode Numbers 29229856
Photo File Name:	

Item Description, including any process and historical knowledge

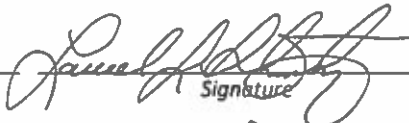

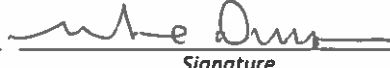
Blue Base Support Structure
Rusted Arch with Wire Protrusions (denoted as Alpha arch)
Rusted Arch with Wire Protrusions (denoted as Bravo arch)

Evaluation

Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y

Comments

These three items were not in the direct beam path

<u>L. Sharisky</u> RCT Name	 Signature	<u>336582</u> Z-Number	<u>09.11.19</u> Date
<u>M. Duran</u> RCT Name	 Signature	<u>106440</u> Z-Number	<u>9/11/19</u> Date
<u>M. Duran</u> HPFC Reviewer	 Signature	<u>106440</u> Z-Number	<u>9/11/19</u> Date

LANSCCE Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 07.18.19	Time: 0830	No. samples: 40
TA: 53	Building: SPOIL LOT	Room: SPOIL LOT

L. Sharisky		336582
RCT Name	Signature	Z Number
W. Duran		10640
RCT Name	Signature	Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7488	7488	01.08.20	127	30	105.67

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15028	15028	08.09.19	84	130

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	91
2	74
3	89
4	84
5	82
Average	84

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
1	Blue Base Component: Top Protrusions	196	Y [1-6]	103	Y
2	Blue Base Component: Top Surface: South Facing half	220	Y [7-9]	78	Y
3	Blue Base Component: Top Surface: North Facing half	223	Y [10-12]	90	Y
4	Blue Base Component: South Facing Side	198	Y [13-14]	78	Y
5	Blue Base Component: East Facing Side	203	Y [15-17]	75	Y
6	Blue Base Component: North Facing Side	199	Y [18-19]	51	Y
7	Blue Base Component: Inside Surface: South Facing half	187	Y [20-23]	85	Y
8	Blue Base Component: Inside Surface: North Facing half	199	Y [24-27]	66	Y
9	Blue Base Component: Bottom	191	Y [28-30]	91	Y
10	Rusted Arch (Alpha): Top side	204	Y [31-33]	64	Y
11	Rusted Arch (Alpha): Bottom Side	199	Y [34-35]	76	Y

LANSCCE Metals Clearance Log

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
11	Rusted Arch (Bravo): Top Side	212	Y [36-37]	55	Y
12	Rusted Arch (Bravo): Bottom Side	185	Y [38-40]	81	Y
N/A	END OF SURVEY	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A

Sample Report

Batch ID:	TA-53 Samples - 201907181114	Count Date:	7/18/2019 11:14:58AM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7859	Operating Volts:	1335
BC#:	29229856	Gamma Volts:	828
Bldg:	29229856	Selected Geometry	5/16" Stainless Steel

RP Tracking Number



Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 247.07$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190718111458-E1	0.00	0.00	8.70	0.45	3.46	16.97	31.82
20190718111629-E2	0.00	0.00	8.70	-1.80	2.62	16.97	-138.64
20190718111739-E3	0.00	0.00	8.70	2.70	4.12	16.97	-36.36
20190718111849-E4	3.21	3.21	8.70	2.70	4.12	16.97	77.27
20190718112009-E5	0.00	0.00	8.70	2.70	4.12	16.97	111.36
20190718112119-E6	3.21	3.21	8.70	13.95	6.51	16.97	338.64
20190718112229-E7	3.21	3.21	8.70	9.45	5.67	16.97	-240.91
20190718112339-E8	0.00	0.00	8.70	4.95	4.70	16.97	20.45
20190718112459-E9	0.00	0.00	8.70	0.45	3.46	16.97	9.09
20190718112609-E10	3.21	3.21	8.70	-4.05	1.35	16.97	236.36
20190718112719-E11	3.21	3.21	8.70	-1.80	2.62	16.97	31.82
20190718112829-E12	3.21	3.21	8.70	4.95	4.70	16.97	-161.36
20190718112940-E13	3.21	3.21	8.70	0.45	3.46	16.97	168.18
20190718113100-E14	0.00	0.00	8.70	-1.80	2.62	16.97	168.18
20190718113210-E15	0.00	0.00	8.70	7.20	5.21	16.97	111.36
20190718113320-E16	0.00	0.00	8.70	2.70	4.12	16.97	20.45
20190718113430-E17	0.00	0.00	8.70	-1.80	2.62	16.97	156.82
20190718113550-E18	0.00	0.00	8.70	-1.80	2.62	16.97	111.36

Batch ID:	TA-53 Samples - 201907181114	Count Date:	7/18/2019 11:14:58AM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7859	Operating Volts:	1335
BC#:	29229856	Gamma Volts:	828
Bldg:	29229856	Selected Geometry	5/16" Stainless Steel

RP Tracking Number



Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

γ = 247.07 dpm

<u>Sample ID</u>	<u>Alpha (dpm)</u>	<u>Unc</u>	<u>Alpha MDA (dpm)</u>	<u>Beta (dpm)</u>	<u>Unc</u>	<u>Beta MDA (dpm)</u>	<u>Gamma (dpm)</u>
20190718113700-E19	0.00	0.00	8.70	4.95	4.70	16.97	100.00
20190718113810-E20	0.00	0.00	8.70	2.70	4.12	16.97	88.64
20190718113920-E21	0.00	0.00	8.70	2.70	4.12	16.97	43.18
20190718114040-E22	0.00	0.00	8.70	4.95	4.70	16.97	-2.27
20190718114150-E23	0.00	0.00	8.70	-1.80	2.62	16.97	-93.18
20190718114300-E24	0.00	0.00	8.70	2.70	4.12	16.97	-36.36
20190718114410-E25	0.00	0.00	8.70	4.95	4.70	16.97	-13.64
20190718114520-E26	0.00	0.00	8.70	9.45	5.67	16.97	-2.27
20190718114640-E27	0.00	0.00	8.70	7.20	5.21	16.97	9.09
20190718114750-E28	0.00	0.00	8.70	2.70	4.12	16.97	9.09
20190718114900-E29	0.00	0.00	8.70	0.45	3.46	16.97	-115.91
20190718115010-E30	0.00	0.00	8.70	-4.05	1.35	16.97	-25.00
20190718115131-E31	0.00	0.00	8.70	4.95	4.70	16.97	-150.00
20190718115241-E32	0.00	0.00	8.70	4.95	4.70	16.97	-59.09
20190718115351-E33	0.00	0.00	8.70	9.45	5.67	16.97	-36.36
20190718115501-E34	3.21	3.21	8.70	-1.80	2.62	16.97	-206.82
20190718115621-E35	0.00	0.00	8.70	4.95	4.70	16.97	134.09
20190718115731-E36	0.00	0.00	8.70	2.70	4.12	16.97	122.73
20190718115841-E37	0.00	0.00	8.70	-1.80	2.62	16.97	65.91
20190718115951-E38	0.00	0.00	8.70	-1.80	2.62	16.97	281.82

Batch ID:	TA-53 Samples - 201907181114	Count Date:	7/18/2019 11:14:58AM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7859	Operating Volts:	1335
BC#:	29229856	Gamma Volts:	828
Bldg:	29229856	Selected Geometry	5/16" Stainless Steel

RP Tracking Number



Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 247.07 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190718120101-E39	3.21	3.21	8.70	0.45	3.46	16.97	-59.09
20190718120221-E40	6.43	4.55	8.70	4.95	4.70	16.97	225.00

~~All Smears~~ < MDALimits
EXCEPT SMEAR # 6 + 88; RECOUNT DATA ON NEXT PAGE

Reviewed by:

 SHARISKY

Sample Report

Batch ID:	TA-53 Samples - 201907181214	Count Date:	7/18/2019 12:14:25PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7860	Operating Volts:	1335
BC#:		Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229856

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 247.07 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190718121425-E6	3.21	3.21	8.70	4.95	4.70	16.97	-115.91
20190718121556-E38	0.00	0.00	8.70	0.45	3.46	16.97	65.91

All Smears < MDALimits

Reviewed by:

SHARISE T.

TA: 53	Bldg: 3R	Rm: 841	Instrument PN: 16028	Cal Due Date: 08.07.19
Model: RadEye SX / Ludlum 44-3	Count time: 60 seconds			

Reference Readings

Check Sources	Isotope	ID#	Activity (dpm)	60 Second Bkg (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Expected -20% (cpm x 0.8)	Expected +20% (cpm x 1.2)
	Sr 90	K-323	40.83	2.17	11200	10923 10923	8739	13107

Date Reference Readings Established: **05.27.19** RCT name: **L. SHARISKY** Signature: *[Signature]* Z-number: **336562**

Performance Test Results

Date/Time	Background (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Pass/ Fail	RCTZ Number	RCT Name	RCT Signature	Comments
05.29.19 1210	279	11400	1121	PASS	286582	L. SHARISKY	<i>[Signature]</i>	NEW PAGE
06.05.19 1200	250	11300	11044	PASS	286582	L. SHARISKY	<i>[Signature]</i>	
06.10.19 0800	283	11100	10817	PASS	336582	L. SHARISKY	<i>[Signature]</i>	METAL CLEARANCE
06.12.19 1230	262	11400	11128	PASS	336582	L. SHARISKY	<i>[Signature]</i>	
06.19.19 1230	248	11500	11252	PASS	336582	L. SHARISKY	<i>[Signature]</i>	
06.24.19 1245	263	11500	11237	PASS	336582	L. SHARISKY	<i>[Signature]</i>	
06.25.19 1220	259	10741	11000	PASS	336582	L. SHARISKY	<i>[Signature]</i>	
06.27.19 0714	240	10740	10760	PASS	336582	L. SHARISKY	<i>[Signature]</i>	
7/1/19 1415	287	11100	10813	PASS	295558	A. Loya - Muroz	<i>[Signature]</i>	
07.11.19 1045	285	11200	10915	PASS	336582	L. SHARISKY	<i>[Signature]</i>	
07.16.19 0845	255	11800	11045	PASS	336582	L. SHARISKY	<i>[Signature]</i>	METAL CLEARANCE
07.17.19 1230	261	11100	10889	PASS	336582	L. SHARISKY	<i>[Signature]</i>	
07.18.19 0810	216	11200	10984	PASS	336582	L. SHARISKY	<i>[Signature]</i>	METAL CLEARANCE

COPY

BETA/GAMMA SURVEY INSTRUMENT PERFORMANCE TEST LOG

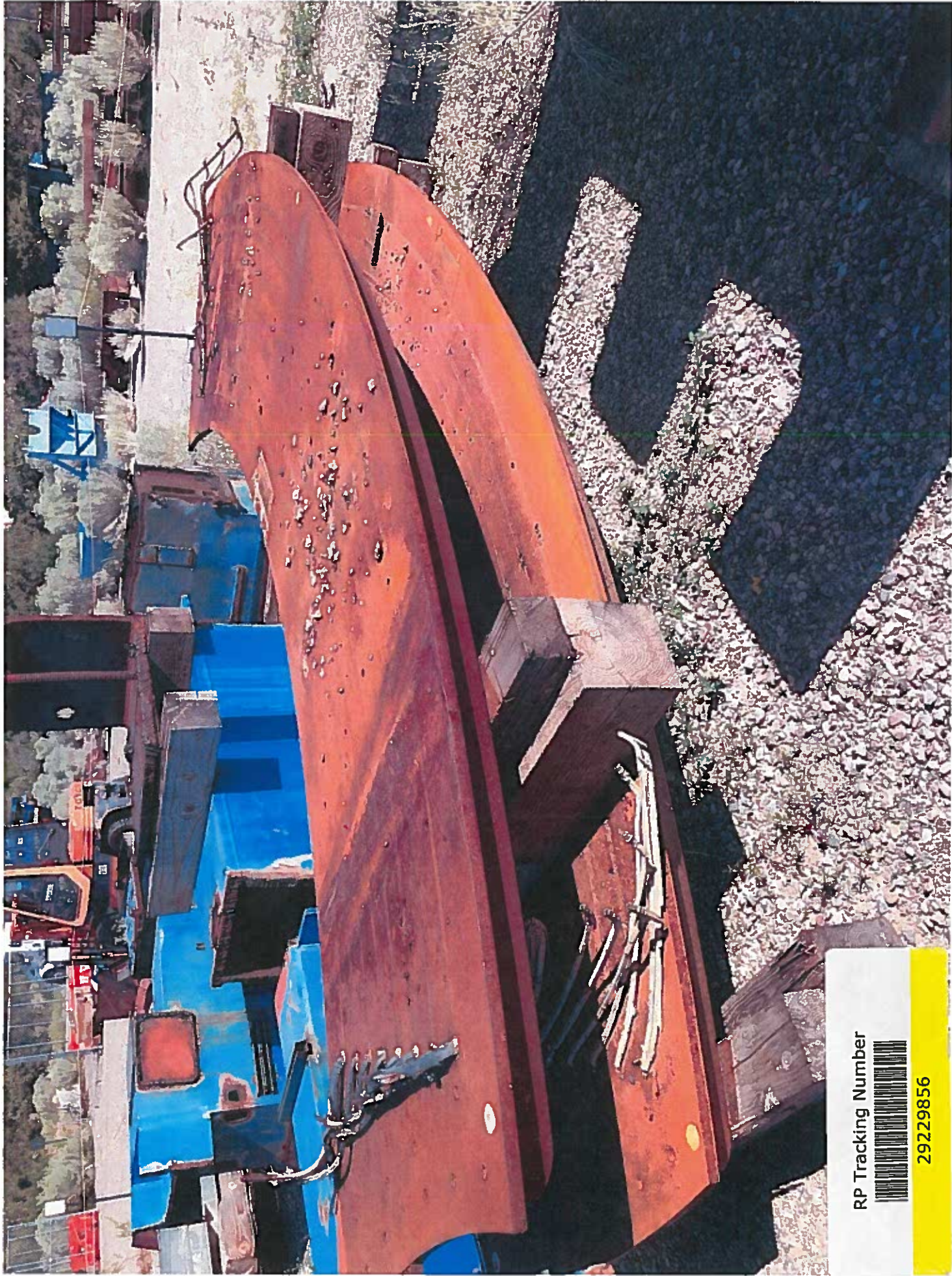
Instrument Manufacturer: Eberline Model: ESP-1 HSE# (P/N): 007488 Cal. Due Date: 01/08/20 Location: TA-53, MPF-3R, Rm. 141

Reference Source ID: K-323 Filter Position or Range: Open Scale Check Source ID #: D38-00 2536
Isotope: Sr⁹⁰ Reference Reading: 1730 dpm N/A N/A 4 Isotope: D-38
Activity: 40.83 μ ci Net Reading: 1115 dpm N/A N/A Activity: 2.6 μ ci
Bkg: 15 dpm Acceptance Range ($\pm 20\%$) 892 dpm / 1338 dpm Reference: 91020 dpm
(200-300 d.c.e.) $\pm 20\%$: 723.6 to 1052.4 dpm

DATE: 03 APR 19 LAUREL J. SHARISKY RCT Name Signature: [Signature] Z Number: 3316592

Date/Time	Background	Net Reference Reading Scale 1	Net Reference Reading Scale 2	Net Reference Reading Scale 3	Net Reference Reading Scale 4	Check Source Reading	Pass/Fail	Printed Name/Signature	Comments
02 MAY 19 / 1300	211	1149	N/A	N/A	N/A	9000	PASS	LAUREL SHARISKY / <u>[Signature]</u>	METAL CLEARANCE / MONTHLY CHECK
06 MAY 19 / 0919	195	1085	N/A	N/A	N/A	8902	PASS	L. SHARISKY / <u>[Signature]</u>	METAL CLEARANCE
06 MAY 19 / 0820	213	1237	N/A	N/A	N/A	8757	PASS	L. SHARISKY / <u>[Signature]</u>	METAL CLEARANCE
11 MAY 19 / 0800	157	1043	N/A	N/A	N/A	8362	PASS	L. SHARISKY / <u>[Signature]</u>	METAL CLEARANCE
15 MAY 19 / 0800	197	1158	N/A	N/A	N/A	8563	PASS	L. SHARISKY / <u>[Signature]</u>	METAL CLEARANCE
16 MAY 19 / 0802	170	1160	N/A	N/A	N/A	8440	PASS	L. SHARISKY / <u>[Signature]</u>	METAL CLEARANCE
22 MAY 19 / 0740	200	1160	N/A	N/A	N/A	8910	PASS	L. SHARISKY / <u>[Signature]</u>	METAL CLEARANCE
06 JUN 19 / 1200	200	1080	N/A	N/A	N/A	8570	PASS	L. SHARISKY / <u>[Signature]</u>	METAL CLEARANCE
10 JUN 19 / 0800	151	1199	N/A	N/A	N/A	8819	PASS	L. SHARISKY / <u>[Signature]</u>	METAL CLEARANCE
08 JUL 19 / 0935	211	1139	N/A	N/A	N/A	9349	PASS	L. SHARISKY / <u>[Signature]</u>	METAL CLEARANCE
16 JUL 19 / 0845	173	1147	N/A	N/A	N/A	9517	PASS	L. SHARISKY / <u>[Signature]</u>	METAL CLEARANCE
18 JUL 19 / 0810	173	1137	N/A	N/A	N/A	9507	PASS	L. SHARISKY / <u>[Signature]</u>	METAL CLEARANCE

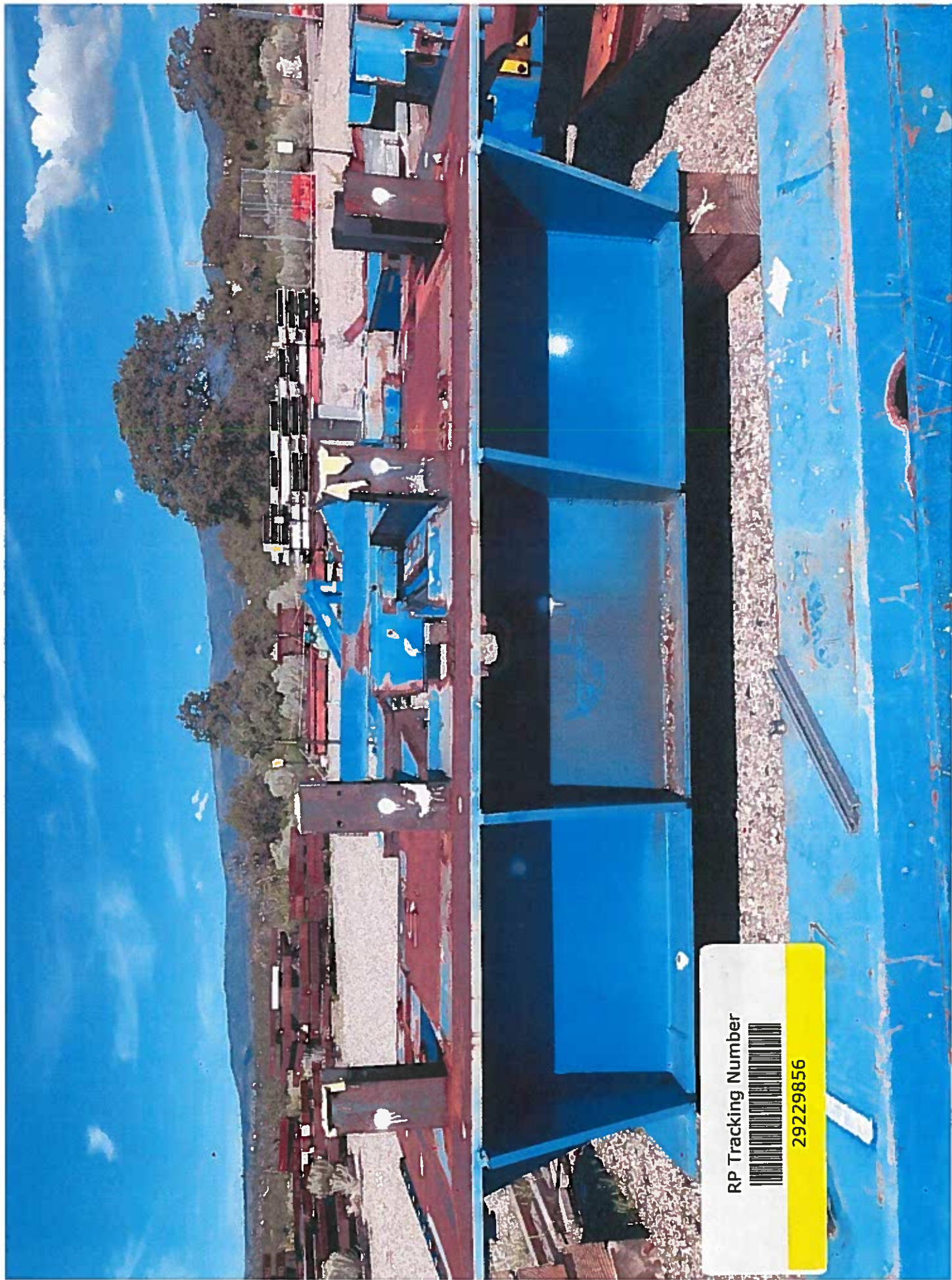
COPY



RP Tracking Number



29229856



RP Tracking Number



29229856

LANSCCE Metals Clearance Log

Date/Time: 07.23.19 / 0830	Item Barcode Numbers
Photo File Name:	29229857

Item Description, including any process and historical knowledge




I Blue Housing Component: 32.5"x30"x36"
II Blue Housing Component: 45"x30"x35"
III Blue Column
IV Blue Housing Component: 33.5"x25"x24"
V Blue Housing Component: 66"x20"x40
VI Blue Housing Component: 35"x23"x33"

Evaluation

Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y

Comments


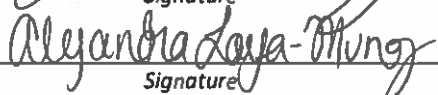
Items survey were not directly in the beam path.
Item VI: Blue Housing Component: 35"x23"x33" was surveyed on 07.25.19 due to rain water collecting on the component; survey was conducted once rain water had evaporated. Second Background data was collected; background data is separated (/) where the left hand data corresponds to the 23 rd and the right hand data corresponds to the 25 th .

L. Sharisky RCT Name	 Signature	336582 Z-Number	09.11.19 Date
A. Loya-Mundz RCT Name	 Signature	295558 Z-Number	09-11-19 Date
M. Duran HPFC Reviewer	 Signature	106440 Z-Number	9/11/19 Date

LANSCCE Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 07.23.19	Time: 0830	No. samples: 52
TA: 53	Building: Spoils Lot	Room: Spoils Lot

L. Sharisky		336582
RCT Name	Signature	Z Number
A. Loya-Munoz		295558
RCT Name	Signature	Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7488	7488	01.20.20	165/159	30%	119.05/117.05

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15028	15028	08.09.19	83/82.4	122/121

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	95/97
2	85/75
3	75/76
4	82/75
5	78/89
Average	83/82.4

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
1	Blue Housing Component I: Top	187	Y [1-2]	77	Y
2	Blue Housing Component I: Bottom	155	Y [3]	101	Y
3	Blue Housing Component I: South Facing Side	162	Y [4]	77	Y
4	Blue Housing Component I: Inside	178	Y [5-6]	65	Y
5	Blue Housing Component II: Top	230	Y [7]	69	Y
6	Blue Housing Component II: Bottom	183	Y [8]	89	Y
7	Blue Housing Component II: North Facing Side	127	Y [9]	67	Y
8	Blue Housing Component II: Inside	200	Y [10-11]	43	Y
9	Blue Column III: Top	177	Y [12-13]	79	Y
10	Blue Column III: Bottom	155	Y [14-15]	92	Y
11	Blue Column III: East Facing Side	209	Y [16-17]	73	Y

LANSCCE Metals Clearance Log

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
12	Blue Column III: West Facing Side	156	Y [18-19]	88	Y
13	Blue Column III: Inside	204	Y [20-21]	52	Y
14	Blue Housing Component IV: Top	192	Y [22]	71	Y
15	Blue Housing Component IV: Bottom	173	Y [23]	56	Y
16	Blue Housing Component IV: North Facing Side	141	Y [24]	72	Y
17	Blue Housing Component IV: Inside	179	Y [25-26]	42	Y
18	Blue Housing Component V: Top	210	Y [27-28]	64	Y
19	Blue Housing Component V: Bottom	204	Y [29-30]	98	Y
20	Blue Housing Component V: North Facing Side	183	Y [31-32]	50	Y
21	Blue Housing Component V: East Facing Side	215	Y [33-34]	57	Y
22	Blue Housing Component V: West Facing Side	211	Y [35-36]	67	Y
23	Blue Housing Component V: Inside	209	Y [37-40]	44	Y
	BEGIN USING DATA FOR 07.25.19				
24	Blue Housing Component VI: South Facing Side	192	Y [41-42]	71	Y
25	Blue Housing Component VI: East Facing Side	197	Y [43]	66	Y
26	Blue Housing Component VI: North Facing Side	186	Y [44-45]	54	Y
27	Blue Housing Component VI: Top Inside	196	Y [46-49]	54	Y
28	Blue Housing Component VI: Bottom Inside	170	Y [50-51]	30	Y
29	Blue Housing Component VI: Bottom	210	Y [52]	64	Y
N/A	END OF SURVEY	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A

Sample Report

Batch ID:	TA-53 Samples - 201907231231	Count Date:	7/23/2019 12:31:50PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7905	Operating Volts:	1335
BC#:	29229857	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229857

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\sigma = 243.04 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190723123150-E1	3.21	3.21	8.70	2.70	4.12	16.97	145.45
20190723123451-E2	3.21	3.21	8.70	-4.05	1.35	16.97	54.55
20190723123601-E3	0.00	0.00	8.70	-1.80	2.62	16.97	-25.00
20190723123711-E4	0.00	0.00	8.70	2.70	4.12	16.97	43.18
20190723123831-E5	0.00	0.00	8.70	2.70	4.12	16.97	65.91
20190723123941-E6	0.00	0.00	8.70	-1.80	2.62	16.97	-93.18
20190723124051-E7	3.21	3.21	8.70	0.45	3.46	16.97	-70.45
20190723124201-E8	0.00	0.00	8.70	-4.05	1.35	16.97	20.45
20190723124321-E9	3.21	3.21	8.70	0.45	3.46	16.97	-172.73
20190723124431-E10	0.00	0.00	8.70	-4.05	1.35	16.97	-81.82
20190723124541-E11	0.00	0.00	8.70	-4.05	1.35	16.97	156.82
20190723124651-E12	0.00	0.00	8.70	4.95	4.70	16.97	-127.27
20190723124802-E13	0.00	0.00	8.70	-4.05	1.35	16.97	-161.36
20190723124922-E14	0.00	0.00	8.70	-1.80	2.62	16.97	31.82
20190723125032-E15	0.00	0.00	8.70	9.45	5.67	16.97	168.18
20190723125142-E16	0.00	0.00	8.70	-1.80	2.62	16.97	-172.73
20190723125252-E17	0.00	0.00	8.70	-1.80	2.62	16.97	213.64
20190723125412-E18	0.00	0.00	8.70	0.45	3.46	16.97	-47.73

Batch ID:	TA-53 Samples - 201907231231	Count Date:	7/23/2019 12:31:50PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7905	Operating Volts:	1335
BC#:	29229857	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229857

$\gamma = 243.04$ dpm

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 \pm 0.00
Beta Rate: 1.80 \pm 0.60
Gamma Rate: 155.20 \pm 5.57

Alpha: 31.11 \pm 0.11
Beta: 44.44 \pm 0.11
Gamma: 8.80

<u>Sample ID</u>	<u>Alpha (dpm)</u>	<u>Unc</u>	<u>Alpha MDA (dpm)</u>	<u>Beta (dpm)</u>	<u>Unc</u>	<u>Beta MDA (dpm)</u>	<u>Gamma (dpm)</u>
20190723125522-E19	0.00	0.00	8.70	-1.80	2.62	16.97	-59.09
20190723125632-E20	0.00	0.00	8.70	0.45	3.46	16.97	304.55
20190723125742-E21	0.00	0.00	8.70	2.70	4.12	16.97	-195.45
20190723125902-E22	0.00	0.00	8.70	4.95	4.70	16.97	134.09
20190723130012-E23	0.00	0.00	8.70	7.20	5.21	16.97	100.00
20190723130122-E24	3.21	3.21	8.70	11.70	6.10	16.97	134.09
20190723130232-E25	0.00	0.00	8.70	2.70	4.12	16.97	88.64
20190723130342-E26	0.00	0.00	8.70	2.70	4.12	16.97	9.09
20190723130502-E27	3.21	3.21	8.70	0.45	3.46	16.97	281.82
20190723130612-E28	3.21	3.21	8.70	4.95	4.70	16.97	-13.64
20190723130722-E29	0.00	0.00	8.70	-1.80	2.62	16.97	315.91
20190723130833-E30	0.00	0.00	8.70	-4.05	1.35	16.97	179.55
20190723130953-E31	3.21	3.21	8.70	13.95	6.51	16.97	122.73
20190723131103-E32	0.00	0.00	8.70	0.45	3.46	16.97	65.91
20190723131213-E33	0.00	0.00	8.70	-1.80	2.62	16.97	202.27
20190723131323-E34	0.00	0.00	8.70	4.95	4.70	16.97	111.36
20190723131433-E35	0.00	0.00	8.70	2.70	4.12	16.97	65.91
20190723131553-E36	0.00	0.00	8.70	-1.80	2.62	16.97	-70.45
20190723131703-E37	0.00	0.00	8.70	-1.80	2.62	16.97	54.55
20190723131813-E38	0.00	0.00	8.70	2.70	4.12	16.97	77.27

Batch ID:	TA-53 Samples - 201907231231	Count Date:	7/23/2019 12:31:50PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7905	Operating Volts:	1335
BC#:	29229857	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229857

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

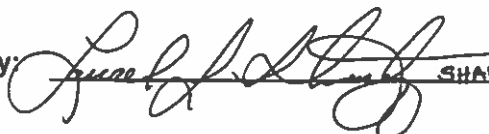
$\gamma = 243.04 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190723131923-E39	0.00	0.00	8.70	-1.80	2.62	16.97	77.27
20190723132043-E40	0.00	0.00	8.70	2.70	4.12	16.97	156.82


~~All Smears~~ < MDALimits

✂ EXCEPT SMEARS # 20, 27, 29; RECOUNTED ON THE NEXT PAGE; SMEARS RECOUNTED DUE TO ELEVATED γ COUNTS

Reviewed by:

 SHARISKY

Sample Report

Batch ID:	TA-53 Samples - 201907231331	Count Date:	7/23/2019 1:31:49PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7906	Operating Volts:	1335
BC#:	<div style="border: 1px solid black; padding: 2px; display: inline-block;">  29229857 </div>	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

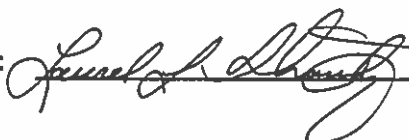
Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 243.04 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190723133149-E20	0.00	0.00	8.70	-1.80	2.62	16.97	213.64
20190723133319-E27	0.00	0.00	8.70	11.70	6.10	16.97	-2.27
20190723133429-E29	0.00	0.00	8.70	0.45	3.46	16.97	-2.27

All Smears < MDALimits

Reviewed by:


SHARKEY

Sample Report

Batch ID:	TA-53 Samples - 201907251042	Count Date:	7/25/2019 10:42:47AM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7923	Operating Volts:	1335
BC#:	29229857	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229857

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 20.2$ 240.57 dpm
07.28.19

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
0190725104247-E41	3.21	3.21	8.70	7.20	5.21	16.97	247.73
0190725104547-E42	3.21	3.21	8.70	2.70	4.12	16.97	-59.09
0190725104657-E43	3.21	3.21	8.70	2.70	4.12	16.97	-70.45
0190725104807-E44	0.00	0.00	8.70	0.45	3.46	16.97	-218.18
0190725104928-E45	0.00	0.00	8.70	-1.80	2.62	16.97	-172.73
0190725105038-E46	0.00	0.00	8.70	2.70	4.12	16.97	20.45
0190725105148-E47	0.00	0.00	8.70	-1.80	2.62	16.97	43.18
0190725105258-E48	0.00	0.00	8.70	-1.80	2.62	16.97	-13.64
0190725105418-E49	0.00	0.00	8.70	-1.80	2.62	16.97	259.09
0190725105528-E50	0.00	0.00	8.70	2.70	4.12	16.97	134.09
0190725105638-E51	0.00	0.00	8.70	-4.05	1.35	16.97	9.09
0190725105748-E52	0.00	0.00	8.70	0.45	3.46	16.97	259.09

All Smears < MDALimits

EXCEPT SMEAR # 41, 49, 52; RECOUNT DATA ON NEXT PAGE; SMEARS RECOUNT DUE TO ELEVATED γ

Reviewed by:

SHARISKY

Sample Report

Batch ID:	TA-53 Samples - 201907251109	Count Date:	7/25/2019 11:09:14AM	
Group:	E	Count Minutes:	1.00	
Device:	S5XLBG Unit2	Count Mode:	Simultaneous	
Batch Key:	7924	Operating Volts:	1335	
BC#:	 29229857		Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel	

Background (cpm)

Alpha Rate: 0.00 ± 0.00
 Beta Rate: 1.80 ± 0.60
 Gamma Rate: 155.20 ± 5.57

Efficiency (%)

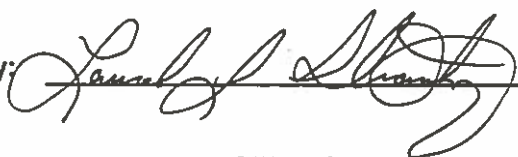
Alpha: 31.11 ± 0.11
 Beta: 44.44 ± 0.11
 Gamma: 8.80

$\gamma = 240.57 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
0190725110914-E41	0.00	0.00	8.70	0.45	3.46	16.97	-59.09
0190725111045-E49	3.21	3.21	8.70	0.45	3.46	16.97	-172.73
0190725111155-E52	0.00	0.00	8.70	7.20	5.21	16.97	-2.27

All Smears < MDA Limits

Reviewed by:


 SHARISKY

BETA/GAMMA SURVEY INSTRUMENT PERFORMANCE TEST LOG

Instrument Manufacturer: Eberline Model: ESP-1 HSE# (P/N): 001488 Cal. Due Date: 01/08/20 Location: TA-53, MPF-3R, Rm. 141

Reference Source

ID: K-323
Isotope: Sr⁹⁰
Activity: 40.831uCi
Bkg: 45 dpm
(200-200 d/cr.)

Filter Position or Range: Open Scale
Reference Reading: 1310 dpm
Net Reading: 1115 dpm
Acceptance Range ($\pm 20\%$): 892 dpm / 1338 dpm

Check Source

ID #: D38-00 WZ-2 2536
Isotope: D-38
Activity: 2.61uCi
Reference: 91020 dpm
 $\pm 20\%$: 7286 to 10924 dpm

Date Reference Readings Established 03 APR 19 LAUREL J. SHARISKY Signature Laurel J. Sharisky Z Number 331582

Date/Time	Background	Net Reference Reading Scale 1	Net Reference Reading Scale 2	Net Reference Reading Scale 3	Net Reference Reading Scale 4	Check Source Reading	Pass/Fail	Printed Name/Signature	Comments
02 MAY 19 / 1300	211	1149	N/A	N/A	N/A	9000	PASS	LAUREL SHARISKY / <i>Laurel Sharisky</i>	METAL CLEARANCE / MONTHLY CHECK
06 MAY 19 / 0719	195	1085	N/A	N/A	N/A	8902	PASS	L. SHARISKY / <i>Laurel Sharisky</i>	METAL CLEARANCE
08 MAY 19 / 0820	213	1237	N/A	N/A	N/A	8757	PASS	L. SHARISKY / <i>Laurel Sharisky</i>	METAL CLEARANCE
14 MAY 19 / 0800	157	1043	N/A	N/A	N/A	8362	PASS	L. SHARISKY / <i>Laurel Sharisky</i>	METAL CLEARANCE
15 MAY 19 / 0600	197	1158	N/A	N/A	N/A	8663	PASS	L. SHARISKY / <i>Laurel Sharisky</i>	METAL CLEARANCE
16 MAY 19 / 0800	170	1160	N/A	N/A	N/A	8440	PASS	L. SHARISKY / <i>Laurel Sharisky</i>	METAL CLEARANCE
22 MAY 19 / 0740	200	1160	N/A	N/A	N/A	8910	PASS	L. SHARISKY / <i>Laurel Sharisky</i>	METAL CLEARANCE
06 JUN 19 / 1200	200	1080	N/A	N/A	N/A	8570	PASS	L. SHARISKY / <i>Laurel Sharisky</i>	METAL CLEARANCE
10 JUN 19 / 0800	151	1199	N/A	N/A	N/A	8819	PASS	L. SHARISKY / <i>Laurel Sharisky</i>	METAL CLEARANCE
08 JUL 19 / 0935	211	1139	N/A	N/A	N/A	9349	PASS	L. SHARISKY / <i>Laurel Sharisky</i>	METAL CLEARANCE
16 JUL 19 / 0845	173	1147	N/A	N/A	N/A	9517	PASS	L. SHARISKY / <i>Laurel Sharisky</i>	METAL CLEARANCE
18 JUL 19 / 0810	173	1137	N/A	N/A	N/A	9507	PASS	L. SHARISKY / <i>Laurel Sharisky</i>	METAL CLEARANCE
28 JUN 19 / 0800	184	1186	N/A	N/A	N/A	8919	PASS	L. SHARISKY / <i>Laurel Sharisky</i>	METAL CLEARANCE

COPY



EST. 1943

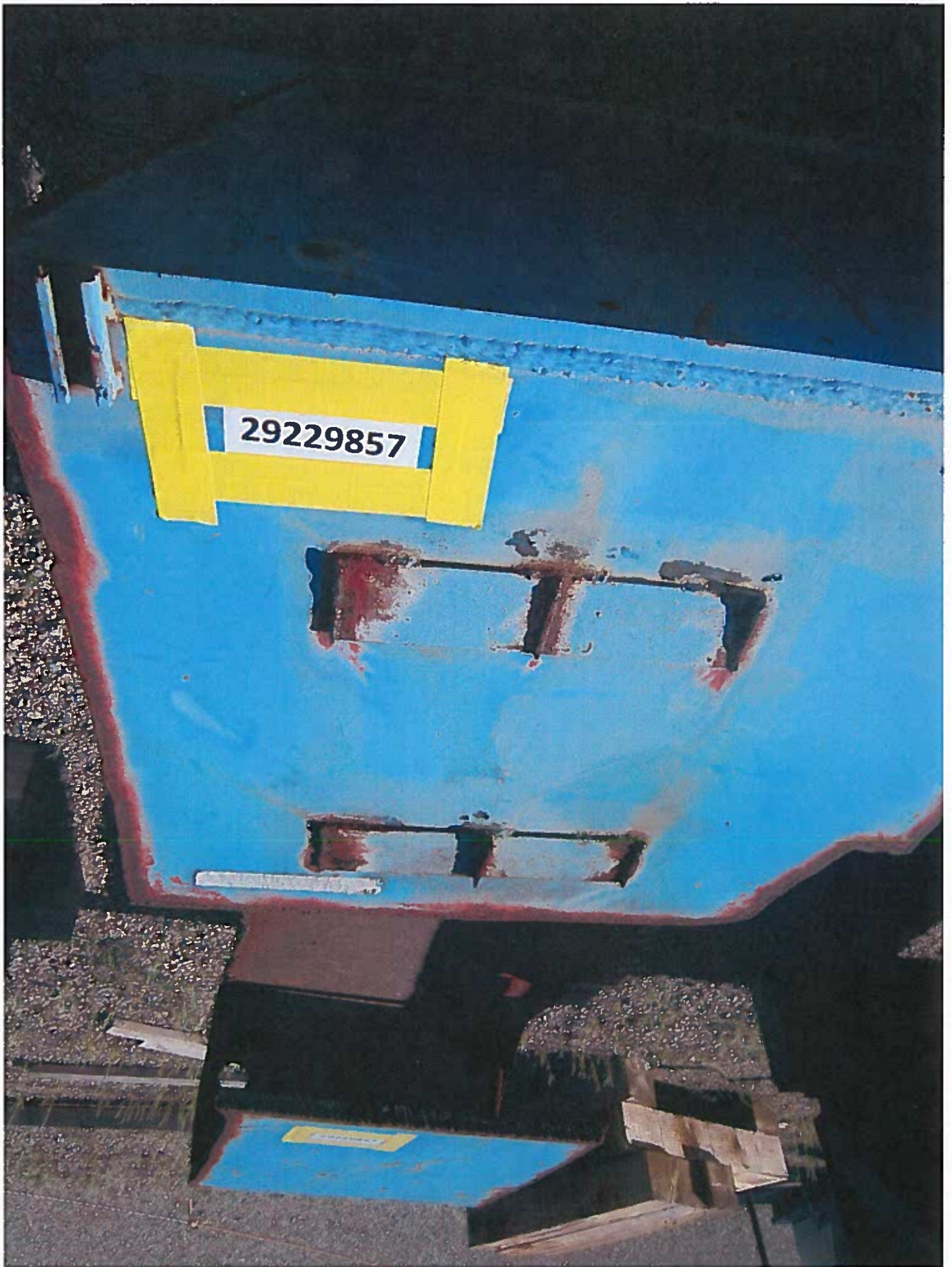
Reference Readings

Check Sources	Isotope	ID#	Activity (dpm)	60 Second Bkg (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Expected -20% (cpm x 0.8)	Expected +20% (cpm x 1.2)
	Sr 90	K-223	40.83	255	11400	11145	8916	13374

Date Reference Readings Established: 23 Jun 19 RCT name: L. SHARKEY Signature [Signature] number: 336582

Performance Test Results

[illegible]



BC# 29229857



BC # 29229857



8c # 29229857



8C# 29229857

LANSCCE Metals Clearance Log

Date/Time: 08.13.19/ 0900	Item Barcode Numbers
Photo File Name:	29229862

Item Description, including any process and historical knowledge



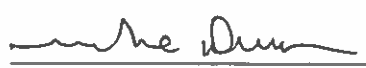
I Blue Housing Component
II Blue Housing Component
III Blue Housing Component
IV Blue Housing Component
V Blue Housing Component

Evaluation

Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y

Comments



Items were not directly in the beam path

L. Sharisky RCT Name	 Signature	336582 Z-Number	09.11.19 Date
A. Loya-Munoz RCT Name	 Signature	295558 Z-Number	09-11-19 Date
M. Duran HPFC Reviewer	 Signature	106440 Z-Number	9/11/19 Date

LANSCCE Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 08.13.19	Time: 0900	No. samples: 54
TA: 53	Building: Spoils Lot	Room: Spoils Lot

L. Sharisky		336582
RCT Name	Signature	Z Number
A. Loya-Munoz		295558
RCT Name	Signature	Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7488	7488	01.20.20	157	30%	116.38

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15031	15031	02.06.20	92.6	135

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	92
2	89
3	76
4	101
5	105
Average	92.6

RP Tracking Number



29229862

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
1	I Blue Housing Component: Top	189	Y [1-3]	67	Y
2	I Blue Housing Component: Bottom	151	Y [4-6]	89	Y
3	I Blue Housing Component: South Facing Side	183	Y [7]	71	Y
4	I Blue Housing Component: East Facing Side	196	Y [8-9]	66	Y
5	I Blue Housing Component: West Facing Side	214	Y [10-11]	73	Y
6	II Blue Housing Component: Top	200	Y [12-14]	66	Y
7	II Blue Housing Component: Bottom	154	Y [15-17]	63	Y
8	II Blue Housing Component: South Facing Side	197	Y [18]	80	Y
9	II Blue Housing Component: East Facing Side	197	Y [19-20]	76	Y
10	II Blue Housing Component: West Facing Side	154	Y [21-22]	74	Y
11	III Blue Housing Component: Top	225	Y [23-25]	73	Y

LANSCCE Metals Clearance Log

[illegible]

Sample Report

Batch ID:	TA-53 Samples - 201908131400	Count Date:	8/13/2019 2:00:36PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	8119	Operating Volts:	1335
BC#:	29229862	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229862

$\gamma = 240.18 \text{ dpm}$

Background (cpm)

Alpha Rate: 0.00 \pm 0.00
Beta Rate: 1.80 \pm 0.60
Gamma Rate: 155.20 \pm 5.57

Efficiency (%)

Alpha: 31.11 \pm 0.11
Beta: 44.44 \pm 0.11
Gamma: 8.80

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190813140036-E1	6.43	4.55	8.70	0.45	3.46	16.97	213.64
20190813140207-E2	3.21	3.21	8.70	4.95	4.70	16.97	-47.73
20190813140317-E3	3.21	3.21	8.70	0.45	3.46	16.97	-104.55
20190813140427-E4	3.21	3.21	8.70	0.45	3.46	16.97	31.82
20190813140547-E5	0.00	0.00	8.70	-1.80	2.62	16.97	168.18
20190813140657-E6	0.00	0.00	8.70	-4.05	1.35	16.97	179.55
20190813140807-E7	0.00	0.00	8.70	2.70	4.12	16.97	31.82
20190813140917-E8	0.00	0.00	8.70	-1.80	2.62	16.97	-2.27
20190813141037-E9	0.00	0.00	8.70	2.70	4.12	16.97	65.91
20190813141147-E10	0.00	0.00	8.70	2.70	4.12	16.97	-195.45
20190813141257-E11	0.00	0.00	8.70	2.70	4.12	16.97	-47.73
20190813141408-E12	0.00	0.00	8.70	-1.80	2.62	16.97	111.36
20190813141517-E13	0.00	0.00	8.70	2.70	4.12	16.97	77.27
20190813141638-E14	0.00	0.00	8.70	7.20	5.21	16.97	54.55
20190813141748-E15	0.00	0.00	8.70	4.95	4.70	16.97	31.82
20190813141858-E16	0.00	0.00	8.70	-4.05	1.35	16.97	338.64
20190813142008-E17	0.00	0.00	8.70	0.45	3.46	16.97	-36.36
20190813142128-E18	0.00	0.00	8.70	-1.80	2.62	16.97	-13.64

Batch ID:	TA-53 Samples - 201908131400	Count Date:	8/13/2019 2:00:36PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	8119	Operating Volts:	1335
BC#:	29229862	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229862

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 240.18 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190813142238-E19	0.00	0.00	8.70	-1.80	2.62	16.97	65.91
20190813142348-E20	0.00	0.00	8.70	0.45	3.46	16.97	-2.27
20190813142458-E21	0.00	0.00	8.70	-4.05	1.35	16.97	179.55
20190813142608-E22	0.00	0.00	8.70	0.45	3.46	16.97	111.36
20190813142728-E23	3.21	3.21	8.70	4.95	4.70	16.97	-2.27
20190813142838-E24	3.21	3.21	8.70	0.45	3.46	16.97	65.91
20190813142948-E25	3.21	3.21	8.70	9.45	5.67	16.97	31.82
20190813143058-E26	0.00	0.00	8.70	-1.80	2.62	16.97	31.82
20190813143218-E27	3.21	3.21	8.70	-1.80	2.62	16.97	-104.55
20190813143329-E28	0.00	0.00	8.70	0.45	3.46	16.97	-252.27
20190813143438-E29	0.00	0.00	8.70	-4.05	1.35	16.97	304.55
20190813143548-E30	0.00	0.00	8.70	-4.05	1.35	16.97	134.09
20190813143709-E31	0.00	0.00	8.70	0.45	3.46	16.97	65.91
20190813143819-E32	0.00	0.00	8.70	-1.80	2.62	16.97	145.45
20190813143929-E33	0.00	0.00	8.70	9.45	5.67	16.97	31.82
20190813144039-E34	0.00	0.00	8.70	7.20	5.21	16.97	-206.82
20190813144149-E35	0.00	0.00	8.70	4.95	4.70	16.97	134.09
20190813144309-E36	0.00	0.00	8.70	2.70	4.12	16.97	77.27
20190813144419-E37	0.00	0.00	8.70	-4.05	1.35	16.97	77.27
20190813144529-E38	0.00	0.00	8.70	-4.05	1.35	16.97	134.09

Batch ID:	TA-53 Samples - 201908131400	Count Date:	8/13/2019 2:00:36PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	8119	Operating Volts:	1335
BC#:	29229862	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229862

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 240.18 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190813144639-E39	0.00	0.00	8.70	-1.80	2.62	16.97	-172.73
20190813144759-E40	0.00	0.00	8.70	-1.80	2.62	16.97	-138.64
20190813144909-E41	0.00	0.00	8.70	2.70	4.12	16.97	-13.64
20190813145019-E42	0.00	0.00	8.70	0.45	3.46	16.97	247.73
20190813145129-E43	0.00	0.00	8.70	2.70	4.12	16.97	-36.36
20190813145240-E44	3.21	3.21	8.70	0.45	3.46	16.97	202.27
20190813145359-E45	0.00	0.00	8.70	2.70	4.12	16.97	77.27
20190813145509-E46	0.00	0.00	8.70	-4.05	1.35	16.97	452.27
20190813145620-E47	0.00	0.00	8.70	0.45	3.46	16.97	-59.09
20190813145730-E48	6.43	4.55	8.70	0.45	3.46	16.97	190.91
20190813145850-E49 alpha exceeds mda	12.86	6.43	8.70	-1.80	2.62	16.97	134.09
20190813150000-E50	0.00	0.00	8.70	-1.80	2.62	16.97	20.45
20190813150110-E51	0.00	0.00	8.70	2.70	4.12	16.97	-59.09
20190813150220-E52	0.00	0.00	8.70	2.70	4.12	16.97	225.00
20190813150340-E53	0.00	0.00	8.70	0.45	3.46	16.97	9.09
20190813150450-E54	0.00	0.00	8.70	-1.80	2.62	16.97	-81.82

All Smears < MDALimits

* EXCEPT SMEAR # 16, 29, 42, 46, 49; RECOUNT DATA ON NEXT PAGE; SMEARS RECOUNT DUE TO RESULTS > MDA ($\gamma + \alpha$)

Reviewed by:

[Signature]

Sample Report

Batch ID:	TA-53 Samples - 201908131558	Count Date:	8/13/2019 3:58:03PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	8122	Operating Volts:	1335
BC#:		Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229862

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

2 = 240.18 dpm

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190813155803-E16	0.00	0.00	8.70	2.70	4.12	16.97	-25.00
20190813155934-E29	0.00	0.00	8.70	-1.80	2.62	16.97	-2.27
20190813160044-E42	0.00	0.00	8.70	-1.80	2.62	16.97	-297.73
20190813160154-E46	0.00	0.00	8.70	0.45	3.46	16.97	361.36
20190813160314-E49	0.00	0.00	8.70	-1.80	2.62	16.97	202.27

All Smears < MDALimits

X EXCEPT SMEAR # 46; RECOUNT DATA ON NEXT PAGE; SMEAR RECOUNTED DUE TO ELAVATED T

Reviewed by:

SHARISKY

Sample Report

Batch ID:	TA-53 Samples - 201908131612	Count Date:	8/13/2019 4:12:42PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	8123	Operating Volts:	1335
BC#:		Gamma Volts:	828
Bldg:	BC# 29229862	Selected Geometry	5/16" Stainless Steel

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 240.18 \text{ dpm}$

<u>Sample ID</u>	<u>Alpha</u> <u>(dpm)</u>	<u>Unc</u>	<u>Alpha MDA</u> <u>(dpm)</u>	<u>Beta</u> <u>(dpm)</u>	<u>Unc</u>	<u>Beta MDA</u> <u>(dpm)</u>	<u>Gamma</u> <u>(dpm)</u>
20190813161242-E46	0.00	0.00	8.70	-4.05	1.35	16.97	-36.36

All Smears < MDALimits

Reviewed by:

 SHARP

Channel: 32 Energy: 12.1 keV Count: 0

Load Primary Spectrum

2019_09_09_11_39_070.spc
20229862

Date: 5-Sep-2019 Time: 1:00:30 PM

Primary Spectrum # 1 of 1

☒ Use current calibration when loading new data

Calibration Check

Calibration Lines Show

Stored Calibration Parameters

Manual Adjustment Mode

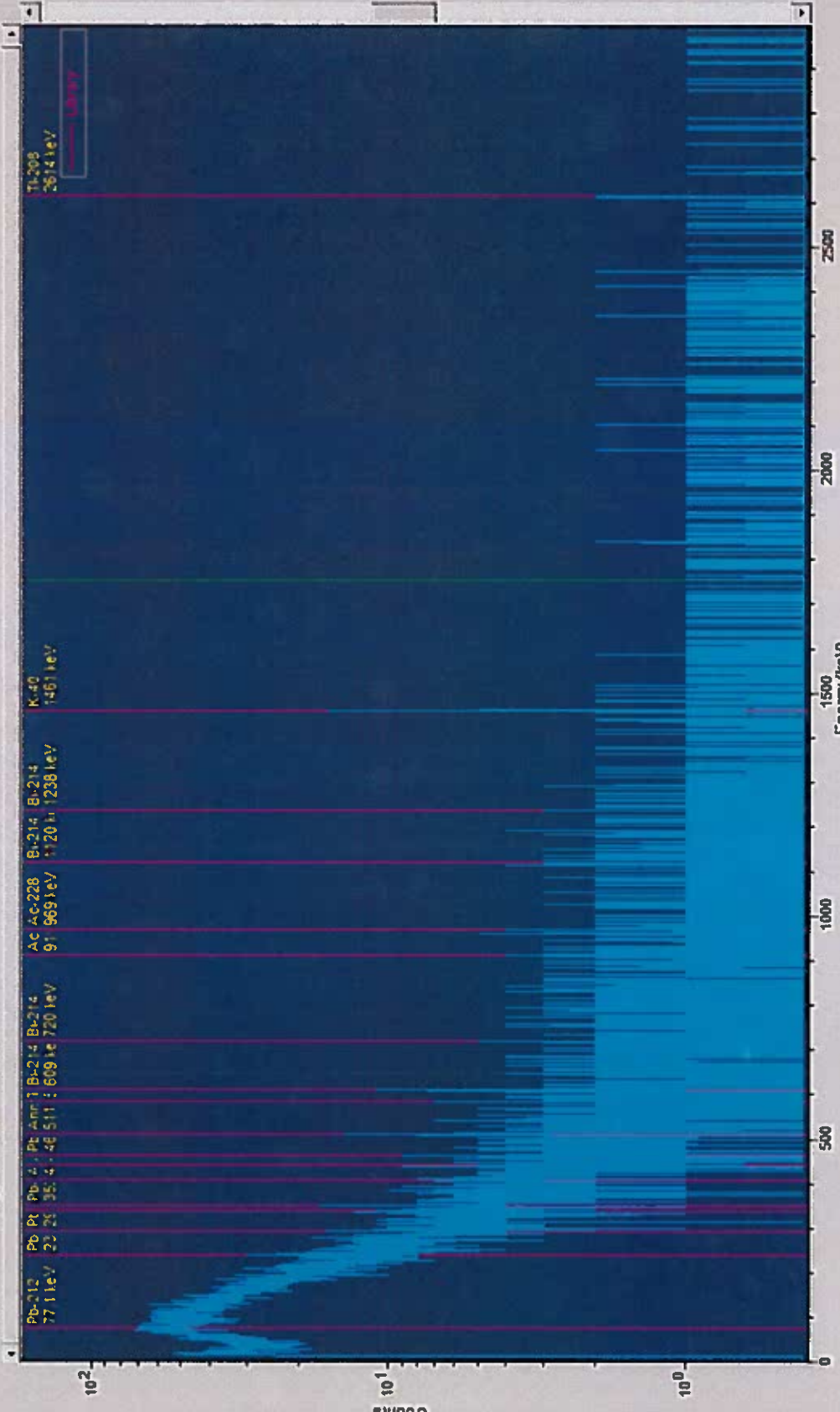
Zero Offset: 0.225 keV/Channel

Gain Adjust: 0.366

Load Second/Back Spectrum

PeakEasyLib

File Drag is Drop Permitted



Zero Offset

Gain Adjust

PeakEasy Isotope Library Isotope Search Advanced Calibration

Radioactive Isotope: Background

Parents and Decay Chains: Th-232, U-238, K-40

Half-Life: NA

Curies / Gram: NA

Density (g/cc): NA

Assumed Age: NA

☒ Include All Daughters

G Dose Rate / Ci @ 1m: 2.36 Rem/yr

☒ Include X-Rays

Energy (keV)	Photo/Decay	Isotope	Decay Mode
1838.36	3.600e-003	Bi-214	Beta-
1764.49	1.540e-001	Bi-214	Beta-
1729.60	2.920e-002	Bi-214	Beta-
1683.99	2.160e-003	Bi-214	Beta-
1666.52	1.780e-003	Ac-228	Beta-
1651.28	1.150e-002	Bi-214	Beta-
1638.28	4.700e-003	Ac-228	Beta-
1630.63	1.510e-002	Ac-228	Beta-
1625.06	2.550e-003	Ac-228	Beta-
1671.50	1.480e-002	Bi-212	Beta-

Save Library Clear Last Clear Lines

RadEye SX / L44-3 Performance Test Log

TA: 53	Bldg: 32	Rm: 41	Instrument PN: 15031	Cal Due Date: 2-6-20
Model: RadEye SX / Ludlum 44-3				Count time: 60 seconds

Reference Readings

Check Sources	Isotope	ID#	Activity (dpm)	60 Second Bkg (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Expected -20% (cpm x 0.8)	Expected +20% (cpm x 1.2)
	SY 40	KL-323	40,834	279	10,000	9,721	7,777	11,665

Date Reference Readings Established: 6-27-19 RCT name: B. Moore Signature: Brian Moore z-number: 322536

Performance Test Results

Background / Sample Count Time: 60 seconds									
Date/Time	Background (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Pass/ Fail	RCTZ Number	RCT Name	RCT Signature	Comments	
6-27-19 0900	279	9891	9,615	Pass	322536	B. Moore	Brian Moore	First test	
7-1-19 0900	211	9836	9,625	Pass	322536	B. Moore	Brian Moore	Free release	
7-3-19 0715	250	10,000	9,750	Pass	322536	B. Moore	Brian Moore	RWP Sec A	
7-8-19 0850	210	10,500	10,290	Pass	322536	B. Moore	Brian Moore	Free release	
7-10-19 0700	240	9,919	9,679	Pass	322536	B. Moore	Brian Moore	RWP 535	
7-11-19 0800	258	11,000	10,742	Pass	322536	B. Moore	Brian Moore	Concrete blocks	
5/1/19 0846	369	11,800	11,431	PASS	331239	ADKISON	ADKISON		
08-08-19 0800	210	11,900	11,630	Pass	336582	L. SHARISKY	L. Sharisky	METAL CLEARANCE	
08-12-19 0800	267	9,930	9,623	Pass	336582	L. SHARISKY	L. Sharisky	METAL CLEARANCE	
08-13-19 0830	260	11,900	11,610	Pass	336582	L. SHARISKY	L. Sharisky	METAL CLEARANCE	

COPY

Instrument Manufacture: Eberline Model: ESP-1 HSE# (P/N): 7488 Cal. Due Date: 01-08-20 Location: TA-53, MPF-3R, Rm. 141

Reference Source

ID: K-323Isotope: Sr^{90}

Activity: 40.83μCi

Bkg: 195 dpm

Filter Position or Range: Open Scale

Reference Reading: 1310 dpm

Net Reading: 1115 dom

Acceptance Range (+20%) 892 dpm/1336 dpm

2 3 4

N/A	N/A	N/A
-----	-----	-----

Case	Year	Age	Gender	Occupation	Education	Marital Status	Religion	Political Affiliation	Health Status	Family Size	Income	Assets	Liabilities	Net Worth	Debt-to-Income Ratio	Debt-to-Asset Ratio	Debt-to-Equity Ratio	Debt-to-Net Worth Ratio	Debt-to-Total Assets Ratio	Debt-to-Total Liabilities Ratio	Debt-to-Total Assets and Liabilities Ratio	Debt-to-Total Assets and Liabilities and Net Worth Ratio
1	2010	35	Male	Software Engineer	Master's Degree	Married	Hindu	Indian National Congress	Good	3	\$100,000	\$50,000	\$20,000	\$30,000	0.20	0.33	0.33	0.33	0.33	0.33	0.33	
2	2011	40	Female	Teacher	Bachelor's Degree	Married	Muslim	Indian National Congress	Good	2	\$80,000	\$40,000	\$15,000	\$25,000	0.25	0.38	0.38	0.38	0.38	0.38	0.38	
3	2012	30	Male	Doctor	PhD	Married	Hindu	Indian National Congress	Good	2	\$120,000	\$60,000	\$25,000	\$35,000	0.17	0.28	0.28	0.28	0.28	0.28	0.28	
4	2013	45	Female	Manager	Master's Degree	Married	Muslim	Indian National Congress	Good	3	\$90,000	\$45,000	\$20,000	\$25,000	0.22	0.37	0.37	0.37	0.37	0.37	0.37	
5	2014	38	Male	Engineer	Bachelor's Degree	Married	Hindu	Indian National Congress	Good	2	\$110,000	\$55,000	\$22,000	\$28,000	0.19	0.30	0.30	0.30	0.30	0.30	0.30	
6	2015	42	Female	Teacher	Bachelor's Degree	Married	Muslim	Indian National Congress	Good	2	\$85,000	\$42,000	\$18,000	\$24,000	0.24	0.39	0.39	0.39	0.39	0.39	0.39	
7	2016	33	Male	Software Engineer	Master's Degree	Married	Hindu	Indian National Congress	Good	2	\$105,000	\$52,000	\$21,000	\$29,000	0.20	0.33	0.33	0.33	0.33	0.33	0.33	
8	2017	47	Female	Manager	Master's Degree	Married	Muslim	Indian National Congress	Good	3	\$95,000	\$47,000	\$21,000	\$26,000	0.22	0.37	0.37	0.37	0.37	0.37	0.37	
9	2018	37	Male	Engineer	Bachelor's Degree	Married	Hindu	Indian National Congress	Good	2	\$115,000	\$57,000	\$23,000	\$30,000	0.19	0.30	0.30	0.30	0.30	0.30	0.30	
10	2019	43	Female	Teacher	Bachelor's Degree	Married	Muslim	Indian National Congress	Good	2	\$88,000	\$43,000	\$19,000	\$25,000	0.24	0.39	0.39	0.39	0.39	0.39	0.39	

NAME	DATE	TIME
1	1	1

Check Source

ID #: D38-00 2536

Isotope: D-38Activity: 2.6 μ ci

Reference: 9020 dpm

$\pm 20\%: 7216 \text{ }^{10}10824 \text{ dpm}$

03 APR 1991

L. E. HARRIS

RCT Name

Signature _____

3345 02

Z Number

Date Reference Readings Established

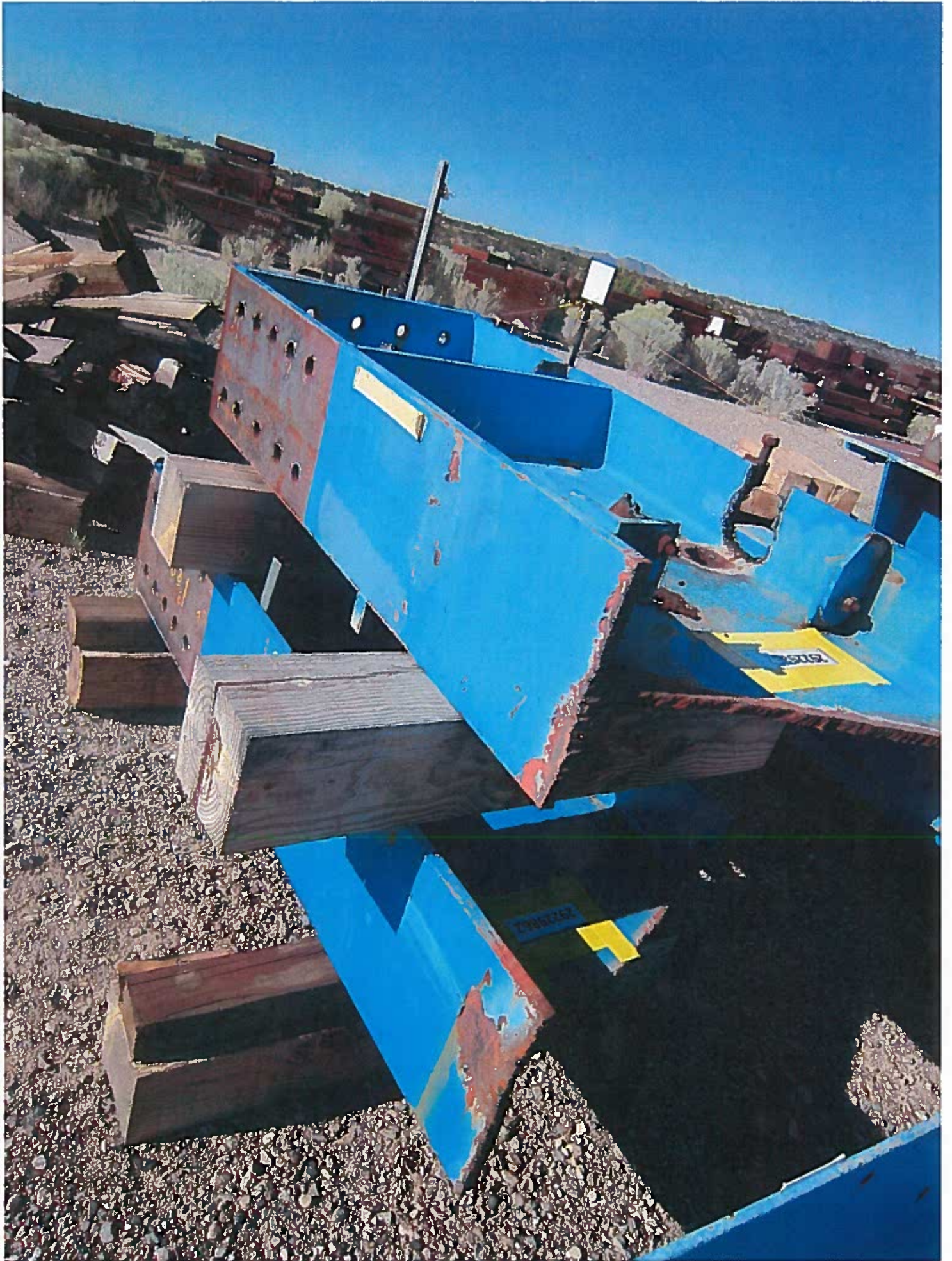
[illegible]



BC # 29229862



Bc # 29229862



8c # 29229862

LANSCCE Metals Clearance Log

Date/Time: 07.24.19/ 0930	Item Barcode Numbers 29229858
Photo File Name:	

Item Description, including any process and historical knowledge




I Blue Housing Component 26"x25"x32"
II Blue Corner Piece
III Blue Housing Component 23"x24"x43"
IV Blue Housing Component 60"x34"x24"
V Blue Corner Strut

Evaluation

Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y

Comments



All items surveyed were not directly in the beam path

L. Sharisky RCT Name	 Signature	336582 Z-Number	09.11.19 Date
M. Duran RCT Name	 Signature	106440 Z-Number	9/11/19 Date
M. Duran HPFC Reviewer	 Signature	106440 Z-Number	9/11/19 Date

LANSCCE Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 07.24.19	Time: 0930	No. samples: 50
TA: 53	Building: Spoils Pile	Room: Spoils Pile

L. Sharisky		336582
RCT Name	Signature	Z Number
M. Duran		106440
RCT Name	Signature	Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7488	7488	01.20.20	130	30%	106.80

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15028	15028	08.09.19	79	118

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	68
2	75
3	91
4	74
5	86
Average	79

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
1	Blue Housing Component I: Top	220	Y [1-2]	91	Y
2	Blue Housing Component I: Bottom	157	Y [3]	85	Y
3	Blue Housing Component I: South Facing Side	172	Y [4]	63	Y
4	Blue Housing Component I: East Facing Side	207	Y [5-6]	55	Y
5	Blue Housing Component I: Inside	207	Y [7-9]	51	Y
6	Blue Corner Piece II: East Facing Side	164	Y [10-11]	97	Y
7	Blue Corner Piece II: West Facing Side	205	Y [12-13]	87	Y
8	Blue Corner Piece II: Top	200	Y [14-15]	91	Y
9	Blue Corner Piece II: Bottom	208	Y [16-17]	97	Y
10	Blue Housing Component III: Top	199	Y [18-19]	83	Y
11	Blue Housing Component III: Bottom	180	Y [20]	80	Y

LANSCCE Metals Clearance Log

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
12	Blue Housing Component III: South Facing Side	120	Y [21-22]	80	Y
13	Blue Housing Component III: North Facing Side	166	Y [23-24]	85	Y
14	Blue Housing Component III: Inside	170	Y [25-28]	50	Y
15	Blue Housing Component IV: Top	197	Y [29-31]	65	Y
16	Blue Housing Component IV: Bottom	134	Y [32-33]	67	Y
17	Blue Housing Component IV: South Facing Side	167	Y [34]	68	Y
18	Blue Housing Component IV: East Facing Side	188	Y [35-37]	61	Y
19	Blue Housing Component IV: West Facing Side	218	Y [38-40]	61	Y
20	Blue Housing Component IV: Inside	196	Y [41-44]	55	Y
21	Blue Corner Strut V: Top	225	Y [45]	65	Y
22	Blue Corner Strut V: Bottom	203	Y [46]	84	Y
23	Blue Corner Strut V: East Facing Side	193	Y [47]	44	Y
24	Blue Corner Strut V: West Facing Side	197	Y [48-49]	87	Y
25	Blue Corner Strut V: North Facing Side	195	Y [50]	56	Y
N/A	END OF SURVEY	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A

Sample Report

Batch ID:	TA-53 Samples - 201907241430	Count Date:	7/24/2019 2:30:25PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7915	Operating Volts:	1335
BC#:	29229858	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229858

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$T = 245.45 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190724143025-E1	0.00	0.00	8.70	-1.80	2.62	16.97	-104.55
20190724143326-E2	0.00	0.00	8.70	2.70	4.12	16.97	-172.73
20190724143436-E3	3.21	3.21	8.70	2.70	4.12	16.97	-13.64
20190724143546-E4	0.00	0.00	8.70	4.95	4.70	16.97	20.45
20190724143706-E5	0.00	0.00	8.70	-4.05	1.35	16.97	225.00
20190724143816-E6	0.00	0.00	8.70	-1.80	2.62	16.97	281.82
20190724143926-E7	3.21	3.21	8.70	4.95	4.70	16.97	111.36
20190724144036-E8	0.00	0.00	8.70	-1.80	2.62	16.97	100.00
20190724144156-E9	0.00	0.00	8.70	-4.05	1.35	16.97	372.73
20190724144306-E10	0.00	0.00	8.70	2.70	4.12	16.97	20.45
20190724144416-E11	0.00	0.00	8.70	0.45	3.46	16.97	43.18
20190724144526-E12	0.00	0.00	8.70	0.45	3.46	16.97	-2.27
20190724144636-E13	0.00	0.00	8.70	-4.05	1.35	16.97	202.27
20190724144756-E14	0.00	0.00	8.70	4.95	4.70	16.97	-2.27
20190724144906-E15	0.00	0.00	8.70	2.70	4.12	16.97	-104.55
20190724145016-E16	3.21	3.21	8.70	-1.80	2.62	16.97	100.00
20190724145126-E17	0.00	0.00	8.70	0.45	3.46	16.97	9.09
20190724145247-E18	0.00	0.00	8.70	-1.80	2.62	16.97	88.64

Batch ID:	TA-53 Samples - 201907241430	Count Date:	7/24/2019 2:30:25PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7915	Operating Volts:	1335
BC#:	29229858	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229858

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 245.45 \text{ dpm}$

<u>Sample ID</u>	<u>Alpha (dpm)</u>	<u>Unc</u>	<u>Alpha MDA (dpm)</u>	<u>Beta (dpm)</u>	<u>Unc</u>	<u>Beta MDA (dpm)</u>	<u>Gamma (dpm)</u>
0190724145357-E19	0.00	0.00	8.70	-1.80	2.62	16.97	-115.91
0190724145507-E20	0.00	0.00	8.70	4.95	4.70	16.97	77.27
0190724145617-E21	0.00	0.00	8.70	0.45	3.46	16.97	-184.09
0190724145737-E22	3.21	3.21	8.70	-1.80	2.62	16.97	88.64
0190724145847-E23	3.21	3.21	8.70	-1.80	2.62	16.97	-263.64
0190724145957-E24	0.00	0.00	8.70	7.20	5.21	16.97	88.64
0190724150107-E25	0.00	0.00	8.70	0.45	3.46	16.97	100.00
0190724150217-E26	0.00	0.00	8.70	-1.80	2.62	16.97	54.55
0190724150337-E27	0.00	0.00	8.70	-1.80	2.62	16.97	100.00
0190724150447-E28	3.21	3.21	8.70	0.45	3.46	16.97	-36.36
0190724150557-E29	0.00	0.00	8.70	-1.80	2.62	16.97	145.45
0190724150707-E30	3.21	3.21	8.70	0.45	3.46	16.97	-127.27
0190724150827-E31	0.00	0.00	8.70	0.45	3.46	16.97	-25.00
0190724150937-E32	0.00	0.00	8.70	-1.80	2.62	16.97	-93.18
0190724151047-E33	0.00	0.00	8.70	2.70	4.12	16.97	-2.27
0190724151157-E34	0.00	0.00	8.70	-1.80	2.62	16.97	-81.82
0190724151308-E35	0.00	0.00	8.70	2.70	4.12	16.97	100.00
0190724151428-E36	0.00	0.00	8.70	0.45	3.46	16.97	54.55
0190724151538-E37	3.21	3.21	8.70	-4.05	1.35	16.97	111.36
0190724151648-E38	0.00	0.00	8.70	-4.05	1.35	16.97	156.82

Batch ID:	TA-53 Samples - 201907241430	Count Date:	7/24/2019 2:30:25PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7915	Operating Volts:	1335
BC#:	29229858	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229858

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 245.45 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
0190724151758-E39	3.21	3.21	8.70	0.45	3.46	16.97	-25.00
0190724151918-E40	3.21	3.21	8.70	0.45	3.46	16.97	145.45
0190724152028-E41	0.00	0.00	8.70	0.45	3.46	16.97	213.64
0190724152138-E42	0.00	0.00	8.70	-4.05	1.35	16.97	88.64
0190724152248-E43	0.00	0.00	8.70	-1.80	2.62	16.97	-161.36
0190724152408-E44	0.00	0.00	8.70	0.45	3.46	16.97	-13.64
0190724152518-E45	0.00	0.00	8.70	-4.05	1.35	16.97	77.27
0190724152628-E46	0.00	0.00	8.70	-4.05	1.35	16.97	-206.82
0190724152738-E47	0.00	0.00	8.70	-1.80	2.62	16.97	9.09
0190724152848-E48	3.21	3.21	8.70	0.45	3.46	16.97	9.09
0190724153008-E49	0.00	0.00	8.70	-4.05	1.35	16.97	-13.64
0190724153118-E50	0.00	0.00	8.70	2.70	4.12	16.97	213.64

All Smears < MDALimits

* EXCEPT SMEAR # 9; RECOUNT DATA ON NEXT PAGE; RECOUNTED DUE TO ELAVATED γ COUNTS

Reviewed by:

Paul Sharisky
SHARISKY

Sample Report

Batch ID:	TA-53 Samples - 201907241541	Count Date:	7/24/2019 3:41:02PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	RP Tracking Number	Count Mode: Simultaneous
Batch Key:	7916		Operating Volts: 1335
BC#:	29229858		Gamma Volts: 828
Bldg:			Selected Geometry 5/16" Stainless Steel

Background (cpm)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Efficiency (%)

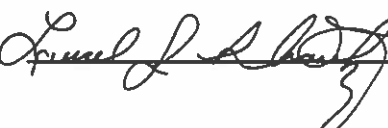
Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

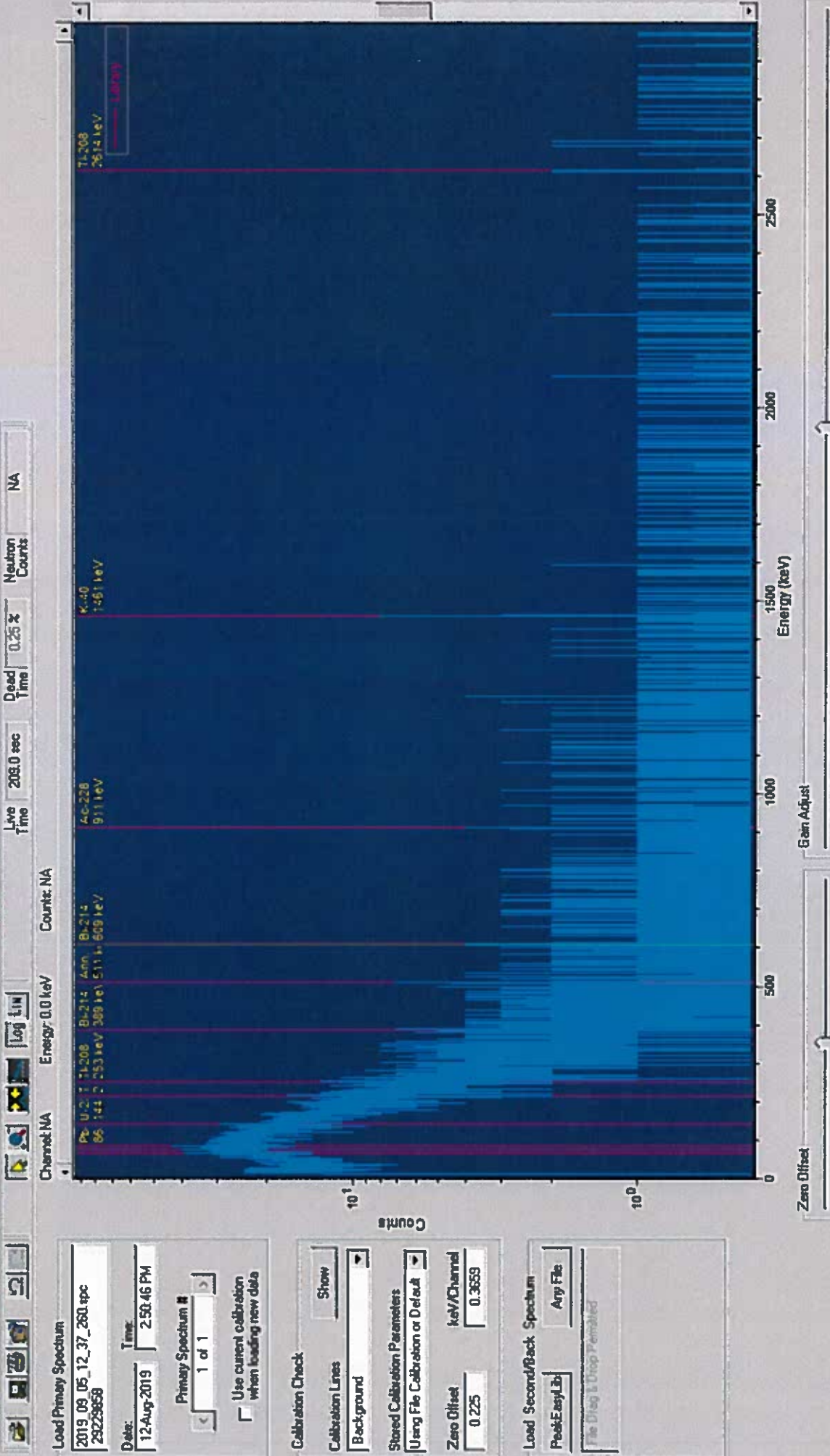
$\gamma = 245.45 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
0190724154102-E9	0.00	0.00	8.70	-1.80	2.62	16.97	20.45

All Smears < MDALimits

Reviewed by:

 STARKEY



Load Primary Spectrum

2019_09_05_12_37_260.spc
29229858

Date: 12-Aug-2019 Time: 2:50:46 PM

Primary Spectrum # 1 of 1

☐ Use current calibration when loading new data

Calibration Check

Calibration Lines Background Show

Stored Calibration Parameters

Using File Calibration or Default

Zero Offset 0.225 keV/Channel 0.3659

Load Second/Back Spectrum

PeakEasyLib Any File

File Drag & Drop / Enabled

PeakEasy Isotope Library Isotope Search Advanced Calibration

Radioactive Isotope Background Th-232 U-238 K-40

Half Life Curves / Gram Density (g/cc) NA NA

Assumed Age NA

G Dose Rate / @ 1m 2.35 Rem/yr

☒ Include All Daughters ☒ Include X-Rays

Energy (keV)	PhotoDecay	Isotope	Decay Mode
348.92	1.200e-003	Bi-214	Beta-
351.06	6.068e-003	Bi-211	Alpha
351.93	3.759e-001	Pb-214	Beta-
366.77	3.100e-003	Bi-214	Beta-
388.88	3.700e-003	Bi-214	Beta-
401.81	2.995e-003	Rn-219	Alpha
404.85	1.778e-003	Pb-211	Beta-
405.74	1.700e-003	Bi-214	Beta-
409.46	1.920e-002	Ac-228	Beta-
415.70	1.479e-003	Ph-212	Beta-

RP Tracking Number

29229858

Save Library Clear Last Clear Lines

BETA/GAMMA SURVEY INSTRUMENT PERFORMANCE TEST LOG

Instrument Manufacture: Eberline Model: ESP-1 HSE# (P/N): 0014850 Cal. Due Date: 01/08/20 Location: TA-53, MPF-3R, Rm. 141

Reference Source

ID: K-323

Isotope: Si⁹⁰

Activity: 40.831uCi

Bkg: 115 dpm
(700-300 d.c.e.)

Filter Position or Range: Open Scale

Reference Reading: 1310 dpm

Net Reading: 1115 dpm

Acceptance Range ($\pm 20\%$): 892 dpm/1338 dpm

Check Source

ID #: D38-00

Isotope: D-38

Activity: 2.61uCi

Reference: 51020 dpm

$\pm 20\%$: 7216 to 10524 dpm

03 APR 19

LAUREL J. SHARISKY

Date Reference Readings Established

RCT Name

Signature

LAUREL J. SHARISKY

Z Number

3316582

COPY

Date/Time	Background	Net Reference Reading Scale 1	Net Reference Reading Scale 2	Net Reference Reading Scale 3	Net Reference Reading Scale 4	Check Source Reading	Pass/Fail	Printed Name/Signature	Comments
02 MAY 19/1300	211	1149	N/A	N/A	N/A	9000	PASS	LAUREL SHARISKY	METAL CLEARANCE / MONTHLY CHECK
06 MAY 19/0919	195	1085	N/A	N/A	N/A	8902	PASS	L. SHARISKY	METAL CLEARANCE
08 MAY 19/0820	213	1237	N/A	N/A	N/A	8767	PASS	L. SHARISKY	METAL CLEARANCE
14 MAY 19/0800	157	1043	N/A	N/A	N/A	8362	PASS	L. SHARISKY	METAL CLEARANCE
15 MAY 19/0800	197	1158	N/A	N/A	N/A	8663	PASS	L. SHARISKY	METAL CLEARANCE
16 MAY 19/0800	170	1160	N/A	N/A	N/A	8440	PASS	L. SHARISKY	METAL CLEARANCE
22 MAY 19/0740	200	1160	N/A	N/A	N/A	8910	PASS	L. SHARISKY	METAL CLEARANCE
08 JUN 19/1200	200	1080	N/A	N/A	N/A	8570	PASS	L. SHARISKY	METAL CLEARANCE
10 JUN 19/0800	151	1199	N/A	N/A	N/A	8819	PASS	L. SHARISKY	METAL CLEARANCE
08 JUN 19/0935	211	1199	N/A	N/A	N/A	9349	PASS	L. SHARISKY	METAL CLEARANCE
16 JUL 19/0845	173	1147	N/A	N/A	N/A	9517	PASS	L. SHARISKY	METAL CLEARANCE
18 JUL 19/0810	173	1137	N/A	N/A	N/A	9507	PASS	L. SHARISKY	METAL CLEARANCE
28 JUL 19/0800	184	1186	N/A	N/A	N/A	8919	PASS	L. SHARISKY	METAL CLEARANCE
24 JUL 19/0745	235	1135	N/A	N/A	N/A	7595	PASS	L. SHARISKY	METAL CLEARANCE



RadEyeSX/ L44-3 Performance Test Log

EST. 1943

TA: 53	Bldg: 32	Rm: 241	Instrument PN: 15028	Cal Due Date: 08.09.19
Model: RadEye SX /Ludlum 44-3				Count time: 60 seconds

Reference Readings

COPY

Check Sources	Isotope	ID#	Activity (dpm)	60 Second Bkg (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Expected -20% (cpm x 0.8)	Expected +20% (cpm x 1.2)
	Sr 90	K-223	40.83	255	11400	11145	8916	13374

Date Reference Readings Established: 23 Jul 19 RCT name: L. SHARKEY Signature: [Signature] Z-number: 326582

Performance Test Results

[illegible]



BC# 29229858



Bc# 29229058



BC# 29229850

LANSCe Metals Clearance Log

Date/Time: 08.01.19 / 0900	Item Barcode Numbers 29229860
Photo File Name:	

Item Description, including any process and historical knowledge




I Blue Corner Strut
II Blue Housing Component 32"x24"x36"
III Blue Housing Component "T" Shaped
IV Blue Support Bracket
V Blue Housing Component "Long Bracket"

Evaluation

Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y

Comments



Items were not directly in beam path.

L. Sharisky RCT Name	 Signature	336582 Z-Number	09.11.19 Date
M. Duran RCT Name	 Signature	106440 Z-Number	09/11/19 Date
M. Duran HPFC Reviewer	 Signature	106440 Z-Number	09/11/19 Date

LANSCC Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 08.01.19	Time: 0900	No. samples: 40
TA: 53	Building: Spoils Lot	Room: Spoils Lot

L. Sharisky		336582
RCT Name	Signature	Z Number
W. Duran		106440
RCT Name	Signature	Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7488	7488	01.08.20	143	30%	111.52

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15028	15028	08.09.19	64.2	100

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	69
2	68
3	70
4	52
5	62
Average	64.2

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
1	I Blue Corner Strut: Top	212	Y [1]	71	Y
2	I Blue Corner Strut: Bottom	197	Y [2]	56	Y
3	I Blue Corner Strut: South Facing Side	188	Y [3]	61	Y
4	I Blue Corner Strut: East Facing Side	220	Y [4]	73	Y
5	I Blue Corner Strut: West Facing Side	120	Y [5]	80	Y
6	II Blue Housing Component: Top	205	Y [6]	69	Y
7	II Blue Housing Component: Bottom	137	Y [7]	89	Y
8	II Blue Housing Component: South Facing Side	194	Y [8]	70	Y
9	II Blue Housing Component: West Facing Side	185	Y [9]	69	Y
10	II Blue Housing Component: North Facing Side	201	Y [10]	62	Y
11	II Blue Housing Component: East Facing Side	205	Y [11]	72	Y

LANSCCE Metals Clearance Log

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
12	II Blue Housing Component: Inside	186	Y [12]	51	Y
13	III Blue Housing Component: Top	207	Y [13-15]	59	Y
14	III Blue Housing Component: Bottom	191	Y [16-18]	94	Y
15	III Blue Housing Component: Inside	186	Y [19]	40	Y
16	III Blue Housing Component: South Facing Side	186	Y [20-21]	67	Y
17	III Blue Housing Component: North Facing Side	196	Y [22-23]	79	Y
18	III Blue Housing Component: East Facing Side	177	Y [24-25]	80	Y
19	III Blue Housing Component: West Facing Side	162	Y [26-27]	65	Y
20	IV Blue Support Bracket: Top	203	Y [28]	90	Y
21	IV Blue Support Bracket: Bottom	194	Y [29]	90	Y
22	V Blue Housing Component: Top	198	Y [30-32]	44	Y
23	V Blue Housing Component: Bottom	183	Y [33-34]	65	Y
24	V Blue Housing Component: North Facing Side	191	Y [35]	63	Y
25	V Blue Housing Component: East Facing Side	223	Y [36-37]	74	Y
26	V Blue Housing Component: South Facing Side	175	Y [38]	63	Y
27	V Blue Housing Component: West Facing Side	200	Y [39-40]	72	Y
N/A	END OF SURVEY	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A

Sample Report

Batch ID:	TA-53 Samples - 201908011405	Count Date:	8/1/2019 2:05:13PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7994	Operating Volts:	1335
BC#:	29229860	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel



29229860

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 247.25 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190801140513-E1	0.00	0.00	8.70	13.95	6.51	16.97	100.00
20190801140814-E2	0.00	0.00	8.70	0.45	3.46	16.97	-127.27
20190801140924-E3	3.21	3.21	8.70	9.45	5.67	16.97	88.64
20190801141034-E4	0.00	0.00	8.70	2.70	4.12	16.97	361.36
20190801141154-E5	0.00	0.00	8.70	4.95	4.70	16.97	-172.73
20190801141304-E6	6.43	4.55	8.70	9.45	5.67	16.97	31.82
20190801141414-E7	0.00	0.00	8.70	-4.05	1.35	16.97	-343.18
20190801141524-E8	0.00	0.00	8.70	-1.80	2.62	16.97	88.64
20190801141644-E9	0.00	0.00	8.70	0.45	3.46	16.97	65.91
20190801141754-E10	0.00	0.00	8.70	-1.80	2.62	16.97	179.55
20190801141904-E11	0.00	0.00	8.70	0.45	3.46	16.97	-93.18
20190801142014-E12	0.00	0.00	8.70	-4.05	1.35	16.97	236.36
20190801142124-E13	0.00	0.00	8.70	2.70	4.12	16.97	-81.82
20190801142244-E14	0.00	0.00	8.70	4.95	4.70	16.97	225.00
20190801142354-E15	0.00	0.00	8.70	-1.80	2.62	16.97	338.64
20190801142504-E16	0.00	0.00	8.70	-1.80	2.62	16.97	281.82
20190801142614-E17	0.00	0.00	8.70	0.45	3.46	16.97	9.09
20190801142735-E18	0.00	0.00	8.70	9.45	5.67	16.97	100.00

Batch ID:	TA-53 Samples - 201908011405	Count Date:	8/1/2019 2:05:13PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7994	Operating Volts:	1335
BC#:	29229860	Gamma Volts:	828
Bldg:	RP Tracking Number	Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229860

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 247.25 \text{ dpm}$

<u>Sample ID</u>	<u>Alpha (dpm)</u>	<u>Unc</u>	<u>Alpha MDA (dpm)</u>	<u>Beta (dpm)</u>	<u>Unc</u>	<u>Beta MDA (dpm)</u>	<u>Gamma (dpm)</u>
20190801142845-E19	0.00	0.00	8.70	2.70	4.12	16.97	-2.27
20190801142955-E20	0.00	0.00	8.70	0.45	3.46	16.97	-2.27
20190801143105-E21	0.00	0.00	8.70	7.20	5.21	16.97	-240.91
20190801143225-E22	0.00	0.00	8.70	7.20	5.21	16.97	-104.55
20190801143335-E23	0.00	0.00	8.70	2.70	4.12	16.97	77.27
20190801143445-E24	0.00	0.00	8.70	0.45	3.46	16.97	-36.36
20190801143555-E25	3.21	3.21	8.70	0.45	3.46	16.97	-127.27
20190801143705-E26	3.21	3.21	8.70	2.70	4.12	16.97	-70.45
20190801143825-E27	3.21	3.21	8.70	7.20	5.21	16.97	-93.18
20190801143935-E28	0.00	0.00	8.70	4.95	4.70	16.97	259.09
20190801144045-E29	0.00	0.00	8.70	4.95	4.70	16.97	-25.00
20190801144155-E30	0.00	0.00	8.70	2.70	4.12	16.97	43.18
20190801144315-E31	0.00	0.00	8.70	7.20	5.21	16.97	-2.27
20190801144425-E32	0.00	0.00	8.70	-1.80	2.62	16.97	-93.18
20190801144535-E33	0.00	0.00	8.70	-1.80	2.62	16.97	-150.00
20190801144645-E34	0.00	0.00	8.70	2.70	4.12	16.97	-150.00
20190801144756-E35	0.00	0.00	8.70	0.45	3.46	16.97	179.55
20190801144916-E36	0.00	0.00	8.70	2.70	4.12	16.97	-47.73
20190801145026-E37	0.00	0.00	8.70	0.45	3.46	16.97	31.82
20190801145136-E38	0.00	0.00	8.70	0.45	3.46	16.97	179.55

Batch ID:	TA-53 Samples - 201908011405	Count Date:	8/1/2019 2:05:13PM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	7994	Operating Volts:	1335
BC#:	29229860	Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel



29229860

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
 Beta Rate: 1.80 ± 0.60
 Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
 Beta: 44.44 ± 0.11
 Gamma: 8.80

$\gamma = 247.25 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190801145246-E39	0.00	0.00	8.70	-1.80	2.62	16.97	100.00
20190801145406-E40	3.21	3.21	8.70	0.45	3.46	16.97	-70.45

All Smears < MDA Limits

& EXCEPT SMEARS # 4, 15, 16, 28; RECOUNT DATA ON NEXT PAGE; RECOUNTED DUE TO ELAVATED γ COUNTS

Reviewed by:

[Signature] SHARSKY

Sample Report

Batch ID: TA-53 Samples - 201908011500

Count Date: 8/1/2019 3:00:59PM

Group: E

Count Minutes: 1.00

Device: S5XLBG Unit2

RP Tracking Number

Count Mode: Simultaneous

Batch Key: 7995



Operating Volts: 1335

BC#:

29229860

Gamma Volts: 828

Bldg:

RP Tracking Number

Selected Geometry 5/16" Stainless Steel

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 247.25$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190801150059-E4	0.00	0.00	8.70	0.45	3.46	16.97	-184.09
20190801150230-E15	0.00	0.00	8.70	4.95	4.70	16.97	-286.36
20190801150340-E16	0.00	0.00	8.70	-4.05	1.35	16.97	156.82
20190801150450-E28	3.21	3.21	8.70	13.95	6.51	16.97	31.82

All Smears < MDALimits

Reviewed by:

 CHARISKY

Channel: 776 Energy: 284.3 keV Counts: 7

Load Primary Spectrum
2019_09_09_11_31_210.spc
250239860

Date: 5-Sep-2019 Time: 1:00:31 PM

Primary Spectrum # 1 of 1

☐ Use current calibration when loading new data

Calibration Check

Calibration Lines Show

Background Show

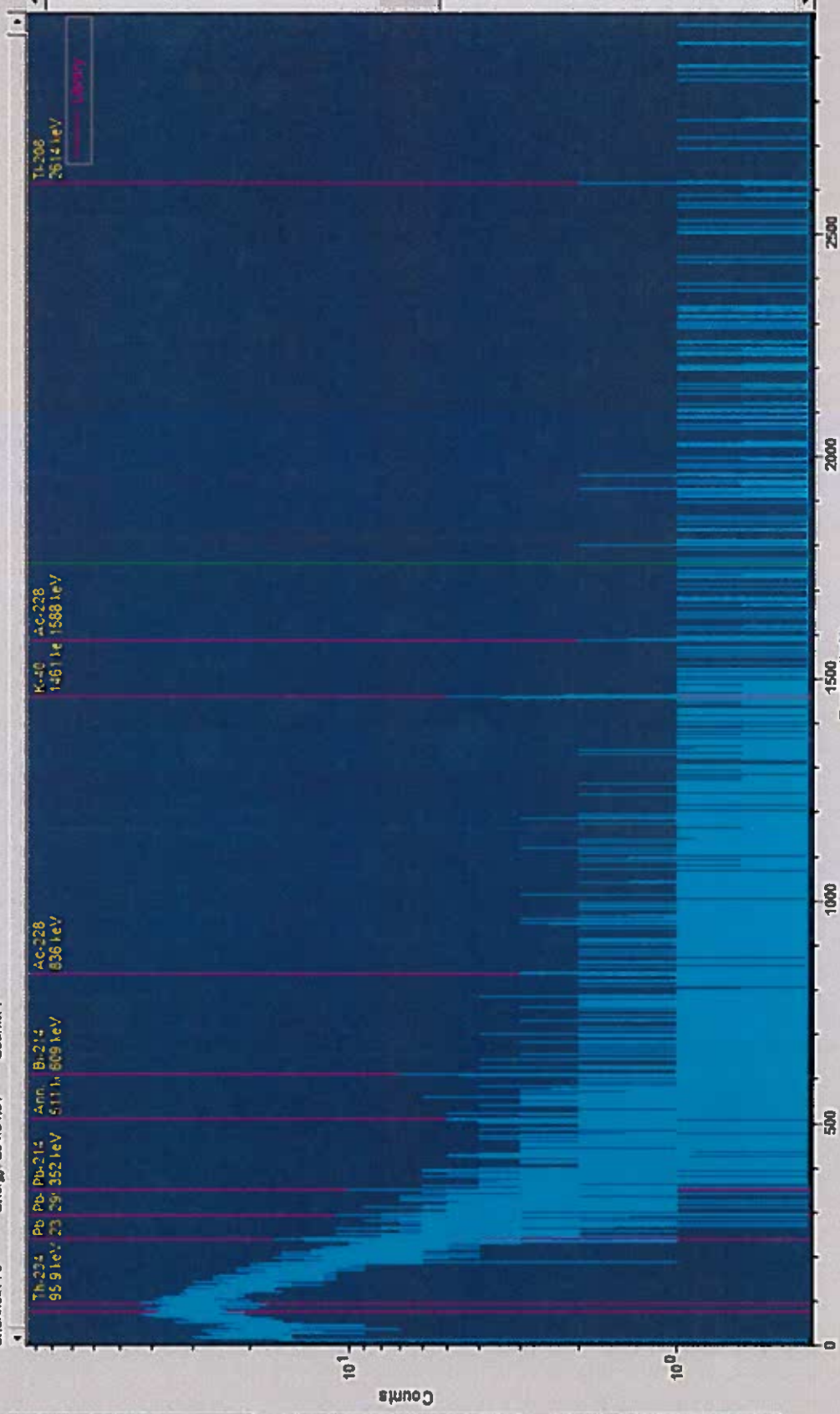
Stored Calibration Parameters
[Using File Calibration or Default]

Zero Offset 0.225 keV/Channel

Load Second/Back Spectrum

PeakEasyLib Any File

File Drag & Drop Forbidden



Zero Offset Gain Adjust

PeakEasy Isotope Library Isotope Search Advanced Calibration

Radioactive Isotope: Background [Th-232, U-238, K-40]

Half Life: NA Curves / Gram: NA Density (g/cc): NA

Assumed Age: NA

G Dose Rate / Ci @ 1m: 2.36 Rem/yr

Parents and Decay Chains: ☒ Include All Daughters ☒ Include X-Rays

Energy (keV)	Photo/Decay	Isotope	Decay Mode
1280.96	1.430e-002	Bi-214	Beta-
1247.08	5.000e-003	Ac-228	Beta-
1238.11	5.790e-002	Bi-214	Beta-
1207.68	4.510e-003	Bi-214	Beta-
1155.19	1.630e-002	Bi-214	Beta-
1153.52	1.390e-003	Ac-228	Beta-
1133.66	2.480e-003	Bi-214	Beta-
1120.29	1.510e-001	Bi-214	Beta-
1110.61	2.850e-003	Ac-228	Beta-
1103.64	1.000e-003	Bi-214	Beta-

Save Library Clear Last Clear Lines

Channel: 3815 Energy: 1395.0 keV Counts: 0

Load Primary Spectrum

2019_09_05_12_41_560.spc

Date: 12-Aug-2019

Time: 250.46 PM

Primary Spectrum #

< 1 of 1 >

Use current calibration when loading new data

Calibration Check

Calibration Lines

Background

Stored Calibration Parameters

Using File Calibration or Default

Zero Offset

0.225

keV/Channel

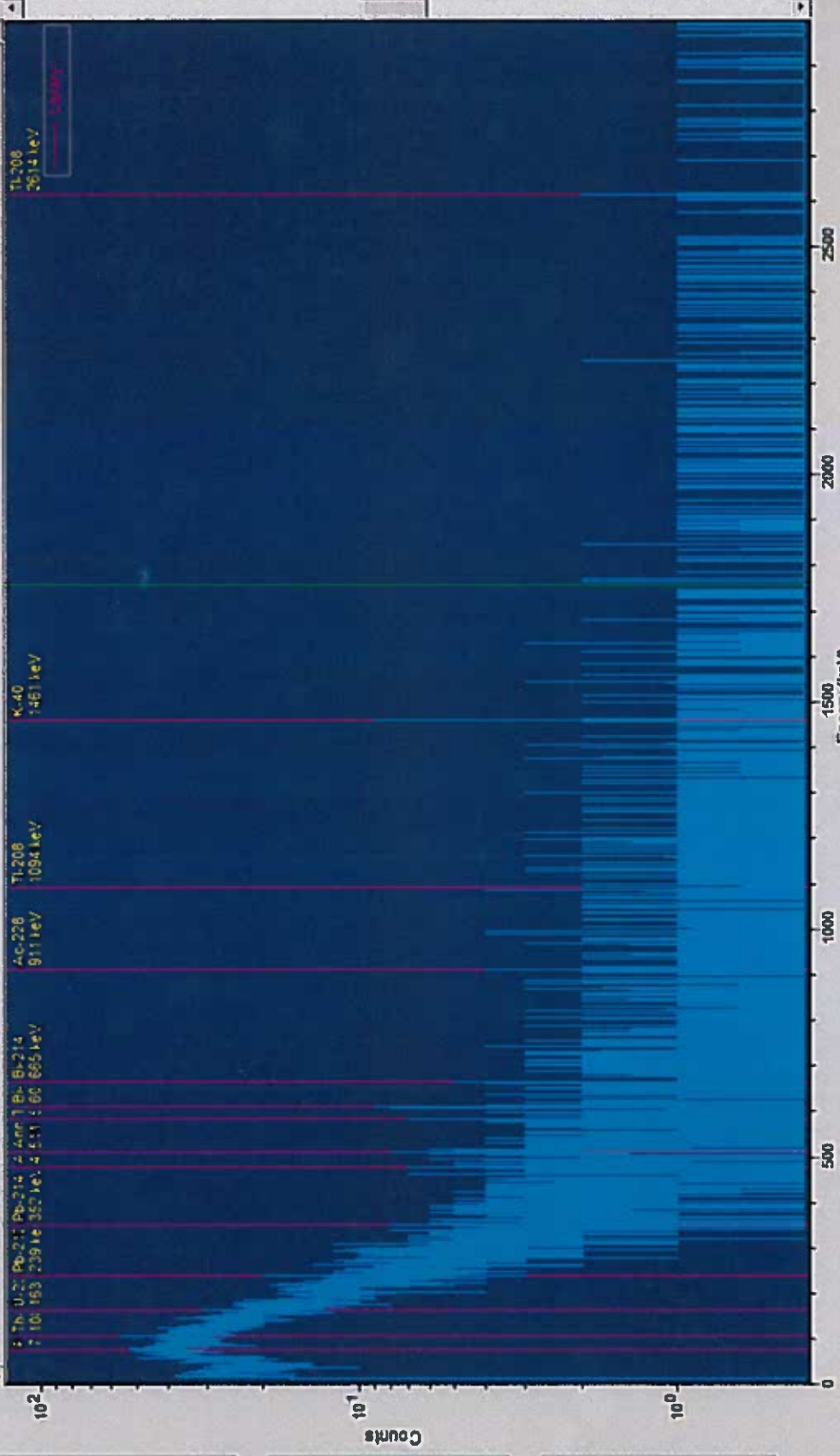
0.3559

Load Second/Back Spectrum

PeakEasyLib

Any File

File Drag & Drop Permitted



Zero Offset

Gain Adjust

PeakEasy Isotope Library Isotope Search Advanced Calibration

Radioactive Isotope

Background

Half-Life

NA

Assumed Age

NA

G Dose Rate / G @ 1m

2.36 Rem/hr

Parents and Decay Chains

Th-232, U-238, K-40

Curies / Gram

NA

Density (g/cc)

NA

☒ Include All Daughters

☒ Include X-Rays

Energy (keV)	Photo/Decay	Isotope	Decay Mode
572.29	1.500e-003	Ac-228	Beta-
580.13	3.519e-003	Pb-214	Beta-
583.19	3.035e-001	Tl-208	Beta-
583.41	1.110e-003	Ac-228	Beta-
595.31	4.510e-001	Bi-214	Beta-
605.45	1.450e-002	Pb-214	Beta-
674.16	1.090e-003	Ac-228	Beta-
701.75	1.730e-003	Ac-228	Beta-
703.11	4.720e-003	Bi-214	Beta-
707.41	1.550e-003	Ac-228	Beta-

Save Library

Clear List

Clear Lines



29229860



RadEye SX/ L44-3 Performance Test Log

TA: 53	Bldg: 3R	Rm: R141	Instrument PN: 15028	Cal Due Date: 08.09.19
Model: RadEye SX /Ludlum 44-3				Count time: 60 seconds

Reference Readings

Check Sources	Isotope	ID#	Activity (dpm)	60 Second Bkg (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Expected -20% (cpmx0.8)	Expected +20% (cpmx1.2)
	Sr 90	K-323	40.83	255	11400	11145	8916	13374

Date Reference Readings Established: 23 JUL 19 RCT name: L. SHARKEY Signature: *L. Sharkey* 336502

Performance Test Results

[illegible]

BETA/GAMMA SURVEY INSTRUMENT PERFORMANCE TEST LOG

EST 1943

Instrument Manufacture: _____ Model: ESP-1 HSE# (P/N): 7483 Cal. Due Date: 01-08-20 Location: TA-53, MPF-3R, Rm. 141

Reference Source						
ID:	K-323	Filter Position or Range:		Open Scale		
Isotope:	Sr ⁹⁰	Reference Reading:		130	dpm	
Activity:	40.83µCi	Net Reading:		1115	dpm	
Bkg:	195 dpm	Acceptance Range (± 20%)		992	dpm / 1330 dpm	
				/		

03 APR 19 _____
Date Reference Readings Established

L. SHARISKY _____
RCT Name

 _____
Signature

334582 _____
Z Number

[illegible]



BC# 29229860



BC # = 29229860



BC #: 29229860

LANSCCE Metals Clearance Log

Date/Time: 08.08.19/ 0900	Item Barcode Numbers
Photo File Name:	29229861

Item Description, including any process and historical knowledge


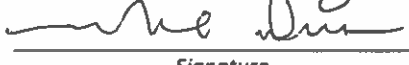

8 Rusty Arch Shaped Components

Evaluation

Survey	Below release criterion? (Y/N)	Releasable? (Y/N)
Direct Beta	Y	Y
Smear	Y	Y
Direct Gamma	Y	Y

Comments

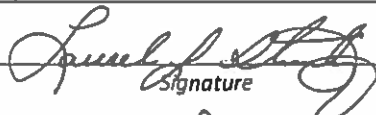

Components were not directly in beam path
Arches are specified using roman numerals

L. Sharisky RCT Name	 Signature	336582 Z-Number	09.11.19 Date
M. Duran RCT Name	 Signature	106440 Z-Number	9/11/19 Date
M. Duran HPFC Reviewer	 Signature	106440 Z-Number	9/11/19 Date

LANSCCE Metals Clearance Log

Item Release Survey—Direct Beta and Gamma Survey

Date: 08.08.19	Time: 0900	No. samples: 32
TA: 53	Building: Spoils Lot	Room: Spoils Lot

L. Sharisky		336582
RCT Name	Signature	Z Number
W. Duran		106440
RCT Name	Signature	Z Number

Instrument Information

Eberline ESP-1 with HP260

ESP-1 PN	HP260 PN	Cal. Due	Background (dpm)	Efficiency	MDA (dpm)
7488	7488	01.20.20	165	30%	119.05

Rad Eye with M44-3

Rad Eye PN	M44-3 PN	Cal. Due	Background Average (cpm)	Decision Level (DL) (cpm)
15031	15031	02.06.20	70.6	110

M44-3 Background Results

Number	Gamma at ½ inch (cpm)
1	70
2	75
3	66
4	81
5	61
Average	70.6

Survey Results

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
1	I: Rusty Arch: Top	223	Y [1-2]	61	Y
2	I: Rusty Arch: Bottom	117	Y [3-4]	79	Y
3	II: Rusty Arch: Top	226	Y [5-6]	86	Y
4	II: Rusty Arch: Bottom	162	Y [7-8]	98	Y
5	III: Rusty Arch: Top	220	Y [9-10]	76	Y
6	III: Rusty Arch: Bottom	162	Y [11-12]	93	Y
7	IV: Rusty Arch: Top	213	Y [13-14]	60	Y
8	IV: Rusty Arch: Bottom	170	Y [15-16]	70	Y
9	V: Rusty Arch: Top	225	Y [17-18]	72	Y
10	V: Rusty Arch: Bottom	156	Y [19-20]	104	Y
11	VI: Rusty Arch: Top	172	Y [21-22]	55	Y

LANSCCE Metals Clearance Log

Survey Area	Item/Area	Direct Beta (dpm)	Smear Taken? (Y/N)	Gamma at 0.5 inch (cpm)	Less than DL? (Y/N)
12	VI: Rusty Arch: Bottom	132	Y [23-24]	98	Y
13	VII: Rusty Arch: Top	224	Y [25-26]	73	Y
14	VII: Rusty Arch: Bottom	186	Y [27-28]	101	Y
15	VIII: Rusty Arch: Top	222	Y [29-30]	64	Y
16	VIII: Rusty Arch: Bottom	182	Y [31-32]	63	Y
N/A	END OF SURVEY	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A

Sample Report

Batch ID:	TA-53 Samples - 201908090848	Count Date:	8/9/2019 8:48:05AM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	8080	Operating Volts:	1335
BC#:	29229861	Gamma Volts:	828
Bldg:	29229861	Selected Geometry	5/16" Stainless Steel

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
Beta Rate: 1.80 ± 0.60
Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
Beta: 44.44 ± 0.11
Gamma: 8.80

$\gamma = 260.82 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190809084805-E1	0.00	0.00	8.70	0.45	3.46	16.97	145.45
20190809085105-E2	0.00	0.00	8.70	-1.80	2.62	16.97	-286.36
20190809085215-E3	0.00	0.00	8.70	-1.80	2.62	16.97	-81.82
20190809085326-E4	0.00	0.00	8.70	2.70	4.12	16.97	43.18
20190809085446-E5	3.21	3.21	8.70	7.20	5.21	16.97	406.82 ~
20190809085556-E6	0.00	0.00	8.70	4.95	4.70	16.97	-184.09
20190809085706-E7	0.00	0.00	8.70	0.45	3.46	16.97	236.36
20190809085816-E8	0.00	0.00	8.70	2.70	4.12	16.97	145.45
20190809085936-E9	0.00	0.00	8.70	0.45	3.46	16.97	9.09
20190809090046-E10	0.00	0.00	8.70	-1.80	2.62	16.97	-59.09
20190809090156-E11	0.00	0.00	8.70	-1.80	2.62	16.97	-206.82
20190809090306-E12	0.00	0.00	8.70	-4.05	1.35	16.97	202.27
20190809090416-E13	0.00	0.00	8.70	-1.80	2.62	16.97	-93.18
20190809090536-E14	3.21	3.21	8.70	-1.80	2.62	16.97	9.09
20190809090646-E15	0.00	0.00	8.70	-1.80	2.62	16.97	168.18
20190809090756-E16	0.00	0.00	8.70	-1.80	2.62	16.97	-150.00
20190809090906-E17	0.00	0.00	8.70	9.45	5.67	16.97	-25.00
20190809091026-E18	0.00	0.00	8.70	-4.05	1.35	16.97	-161.36

Batch ID: TA-53 Samples - 201908090848 Count Date: 8/9/2019 8:48:05AM
 Group: E Count Minutes: 1.00
 Device: S5XLBG Unit2 Count Mode: Simultaneous
 Batch Key: 8080 RP Tracking Number
 BC#: 29229861
 Bldg: 29229861 Selected Geometry 5/16" Stainless Steel

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00
 Beta Rate: 1.80 ± 0.60
 Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11
 Beta: 44.44 ± 0.11
 Gamma: 8.80

$\gamma = 260.82$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190809091137-E19	0.00	0.00	8.70	0.45	3.46	16.97	225.00
20190809091246-E20	0.00	0.00	8.70	-1.80	2.62	16.97	-59.09
20190809091357-E21	3.21	3.21	8.70	0.45	3.46	16.97	65.91
20190809091517-E22	0.00	0.00	8.70	2.70	4.12	16.97	77.27
20190809091627-E23	0.00	0.00	8.70	2.70	4.12	16.97	-25.00
20190809091737-E24	0.00	0.00	8.70	2.70	4.12	16.97	-172.73
20190809091847-E25	0.00	0.00	8.70	-4.05	1.35	16.97	-93.18
20190809091957-E26	0.00	0.00	8.70	7.20	5.21	16.97	-13.64
20190809092117-E27	0.00	0.00	8.70	-4.05	1.35	16.97	43.18
20190809092227-E28	0.00	0.00	8.70	-1.80	2.62	16.97	-172.73
20190809092337-E29	0.00	0.00	8.70	2.70	4.12	16.97	-184.09
20190809092447-E30	0.00	0.00	8.70	7.20	5.21	16.97	-2.27
20190809092607-E31	0.00	0.00	8.70	-1.80	2.62	16.97	145.45
20190809092717-E32	9.64	5.57	8.70	-4.05	1.35	16.97	31.82

alpha exceeds mda

All Smears < MDALimits

* EXCEPT SMears # 5, # 32; RECOUNT DATA ON NEXT PAGE; RECOUNTED DUE TO ELAVATED COUNTS #5 → T > MDA
#32 → CC > MDA

Reviewed by:

[Signature] SHARKEY

Sample Report

Batch ID:	TA-53 Samples - 201908090942	Count Date:	8/9/2019 9:42:16AM
Group:	E	Count Minutes:	1.00
Device:	S5XLBG Unit2	Count Mode:	Simultaneous
Batch Key:	8081	Operating Volts:	1335
BC#:		Gamma Volts:	828
Bldg:		Selected Geometry	5/16" Stainless Steel

RP Tracking Number



29229861

Background (cpm)

Efficiency (%)

Alpha Rate: 0.00 ± 0.00

Beta Rate: 1.80 ± 0.60

Gamma Rate: 155.20 ± 5.57

Alpha: 31.11 ± 0.11

Beta: 44.44 ± 0.11

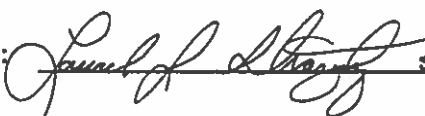
Gamma: 8.80

$\gamma = 260.82 \text{ dpm}$

Sample ID	Alpha (dpm)	Unc	Alpha MDA (dpm)	Beta (dpm)	Unc	Beta MDA (dpm)	Gamma (dpm)
20190809094216-E5	3.21	3.21	8.70	11.70	6.10	16.97	-59.09
20190809094346-E32	0.00	0.00	8.70	4.95	4.70	16.97	43.18

All Smears < MDALimits

Reviewed by:

 SHARKEY

Instrument Manufacture: Eberline Model: ESP-1 HSE# (P/N): 7483 Cal. Due Date: 01.06.20 Location: TA-53, MPF-3R, Rm. 141

03 APR 19
Date Reference Readings Established

L. SHARISKY
RCT Name

L. Sharisky
Signature

336582
Z Number

Date/Time	Background	Net Reference Reading Scale 1	Net Reference Reading Scale 2	Net Reference Reading Scale 3	Net Reference Reading Scale 4	Check Source Reading	Pass/Fail	Printed Name/Signature	Comments
07/30/2019	16B	1122	N/A	N/A	N/A	9202	PASS	L. SHARKEY / <i>[Signature]</i>	METAL CLEARANCE
08/06/2019	216	1174	N/A	N/A	N/A	9044	PASS	L. SHARKEY / <i>[Signature]</i>	METAL CLEARANCE
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COPY

body

RadEye SX/ L44-3 Performance Test Log

EST. 1943

TA: 53	Bldg: 32	Rm: 141	Instrument PN: 15031	Cal Due Date: 2-6-20
Model: RadEye SX /Ludlum 44-3				Count time: 60 seconds

Reference Readings

Check Sources	Isotope	ID#	Activity (dpm)	60 Second Bkg (cpm)	Gross Check Source (cpm)	Net Check Source (cpm)	Expected -20% (cpm x 0.8)	Expected +20% (cpm x 1.2)
	⁹⁰ Sr	K-323	40,834 c	279	10,000	9,721	7,777	11,665

Date Reference Readings Established: 6-27-19 RCT name: B. Moore Signature: B. Moore z-number: 322536

Performance Test Results

[illegible]



BC # 29229861